TB 5/24/95

Report No.: 8003-411
Work Assignment No.: 038-2JZZ
Contract No.: 68-W9-0051
May 17, 1995
Rev. No. 0

Mr. Joseph Hudek
Pre-Remedial WAM
U.S. Environmental Protection Agency (USEPA)
Region II - Environmental Services Division
Edison, New Jersey 08837

RE: Summit Metals Inc. Site Inspection Prioritization Evaluation Report

Dear Mr. Hudek:

The following is a summary of the Site Inspection Prioritization Evaluation of the Summit Metals Inc. site, (CERCLIS ID No. NJD981187016) (Ref. No. 1).

General Description and Site History

The Summit Metals Inc. (SMI) site is an active facility located on Aetna Street (at the foot of Jersey Avenue), Jersey City, Hudson County, New Jersey (Ref. No. 1). The facility is located in an industrial area of Jersey City and is bordered by Jersey State Power Equipment Co. to the west, Jersey Avenue to the east, and Aetna Street to the south. To the north of the facility are railroad tracks (Ref. Nos. 4; 10, p. 2; 11, p. 4). The SMI site has been a scrap metal recycling facility (including transformers and electrical equipment) since 1968 and is owned and operated by Mr. Julius Brauer (Ref. No. 4, p. 1). See Figures 1 and 2 for a Site Location Map and Site Map, respectively.

The facility acquired transformers from various sources, dismantled them and drained the oil into tanks or drums. The oil taken from the transformers was used as fuel to supply an on-site furnace. The copper cores of the transformers and other metals are sold as scrap (Ref. No. 6, p. 1). The oil (some containing polychlorinated biphenyls (PCB)) was used in the on-site furnace, for burning the insulation off the copper wiring taken from the transformers (Ref. Nos. 4, p. 3; 6). This practice was discontinued at an unknown date but it was noted in a New Jersey Department of Environmental Protection (NJDEP) inspection on March 14, 1983, that the facility was using wood to heat the furnace (Ref. Nos. 4, p. 3; 6; 11, p. 2). A letter from the USEPA to Joseph Rogalski of the NJDEP dated May 4, 1983, indicated that the counsel for the facility stated that SMI was no longer collecting oil from electric equipment (Ref. No. 15, p. 3).

On February 18, 1981, the NJDEP performed an investigation of the SMI site and discovered the facility was utilizing three storage tanks to store the PCB laden oil. It was found that two of the storage tanks were actually old transformers which had the cores removed. The capacities of these tanks are 3,400 gallons and 2,500 gallons. The third storage tank was a 250-gallon capacity fuel oil tank. In addition, five 55-gallon drums containing a translucent yellow oil were observed. During this inspection, the NJDEP sampled the three on-site holding tanks, three of the drums, and collected two composite soil samples (Ref. No. 6). The soil samples indicated elevated levels of PCB's as high as 1,270 parts per million (ppm) (Ref. Nos. 4, p. 3; 6, pp. 1-2; 8, p. 2).

On April 15, 1981, the USEPA performed a PCB inspection at the SMI facility. The inspectors sampled both the 3,400 gallon and the 2,500 gallon storage tanks. The inspectors also noted that heavy rains the day before had left oily surfaced standing puddles on the property (Ref. No. 9, pp. 1-2).

The NJDEP performed a follow-up investigation on November 4, 1982 concerning the disposal of the PCB contaminated oils at the SMI site. At that time, the facility had not yet disposed of the contaminated fluids. It was noted that approximately 665 gallons of PCB fluid were present on-site. Samples were taken from containers, other than the 665 gallons previously tested, which contained an oily fluid to determine if there

Scale: 0 1000 2000 4000 FEET

N

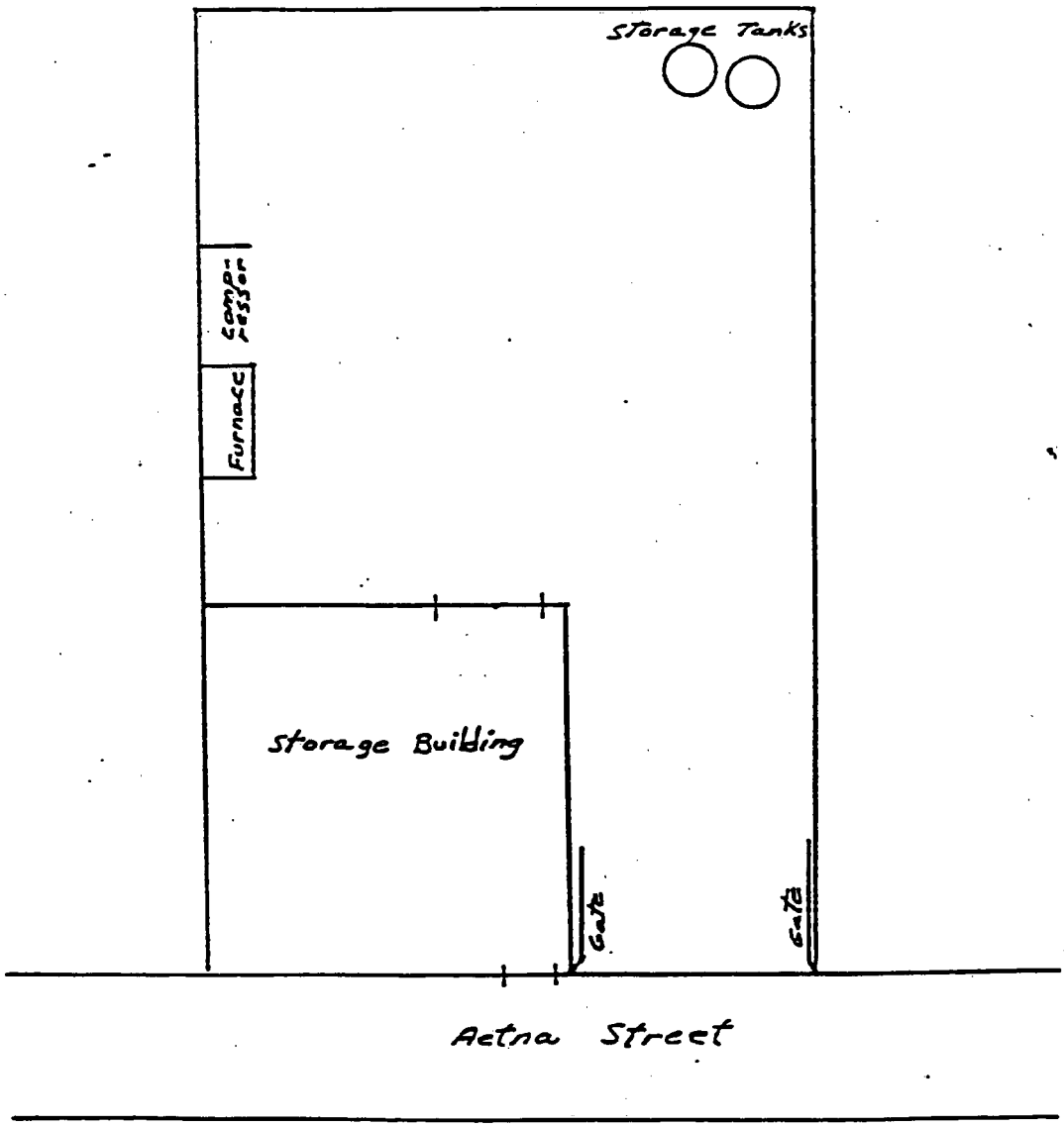
MAP SOURCE:

Based on U.S.G.S. 7.5 Minute Series Topographic Map.
Quadrangle of "Jersey City, NJ", Dated 1967,
Photorevised 1981.

SITE LOCATION MAP
SUMMIT METALS INC.
JERSEY CITY, HUDSON COUNTY, NJ

MALCOLM PIRNIE

DATE: 10 MAY 95	FIGURE 1



SCALE:
Not to scale.

MAP SOURCE:
Based on USEPA Figure 2, Site Map.

N

SITE MAP
SUMMIT METALS INC.
JERSEY CITY, HUDSON COUNTY, NJ

MALCOLM PIRNIE

DATE: 10 MAY 95 | FIGURE 2

was any additional contaminated fluid present. Two composite samples were collected from a white 55-gallon drum and 250-gallon furnace feed tank, and three 3/4 full 35-gallon drums which were located inside the warehouse. These samples, for which results were not available in site files, were analyzed and determined to be hazardous by the NJDEP (Ref. Nos. 10; 11; 12; 13).

Subsequent to a Notice of Violation, issued to SMI from the NJDEP, pursuant to the Solid Waste Management Act, the NJDEP issued a Penalty Settlement Offer on February 7, 1983 to the facility. The state ordered the facility to remove and properly dispose of all contaminated soils, and all hazardous substances which have leaked or spilled from drums or containers at an authorized waste facility. SMI was also required to label all containers, complete the appropriate manifests, and dispose of the wastes using a properly registered collector/hauler. The NJDEP was to be notified 10 days before clean up commenced at the facility and three days prior to shipment of the hazardous waste (Ref. No. 12, pp. 1-4). The SMI site did arrange for shipment and disposal of the hazardous waste which was performed on June 16, 1983. The items which were shipped on NJ Manifest #0117807 were five 55-gallon drums of PCB transformer oil, one empty PCB contaminated cylindrical tank, two 55-gallon drums of PCB waste oil, and three 30-gallon drums of PCB waste oil (Ref. No. 13, p. 1).

On April 10, 1984, the NJDEP performed a Site Inspection at the SMI facility. Inspectors noted that there were approximately 100 gallons, in four 55-gallon drums, on the property. The inspectors also noted that the on-site soils remained laden with oil (Ref. No. 4, pp. 2-3). On August 7, 1984 Mr. Julius Brauer, owner of SMI, and the USEPA entered into a Consent Agreement and Final Order. This document ordered the SMI site to comply thereafter to all provisions in 40 CFR Part 761 pertaining to PCB Marking and Disposal Regulations (Ref. Nos. 14, p. 5; 15, pp. 14-15).

Evaluation of Existing Information

Information in the site file, the 1984 NJDEP Site Inspection, and the various Hazardous Waste Investigations performed by the NJDEP were used to conduct the initial evaluation of the site. This information indicated the primary route of concern for contamination migration is via soil exposure.

The NJDEP performed an inspection at the SMI facility on February 18, 1981. During this inspection, the NJDEP sampled the three on-site holding tanks, three drums and collected two composite soil samples (Ref. No. 6). Analysis of the oil samples collected from the drums did not indicate the presence of PCB's; however, analysis of the soil samples indicated elevated levels of PCB's as high as 1,270 ppm (Ref. Nos. 4, p. 3; 6, pp. 1-2; 8, p. 2). The three tank samples, analyzed by Stablex-Reutter, Inc., indicated elevated levels of PCB's, expressed as Aroclor-1254, as high as 2,200 ppm (Ref. Nos. 4, p. 2; 6, pp. 1-2; 7, p. 2).

On April 15, 1981, the USEPA performed a PCB inspection at the SMI facility during which two oil samples and two soil samples were collected. Sample number 57858 was from the larger tank and analytical results revealed 140 ppm of PCB's. Sample number 57859, taken from the smaller of the two tanks, yielded 2,400 ppm of PCB's. Sample numbers 57861 and 57860 were collected in the area of the oil laden soils and were found to contain 450 ppm and 1,270 ppm PCB's, respectively (Ref. No. 9, pp. 1-2). The on-site soils became contaminated due to inadequate waste management procedures conducted at the site (Ref. Nos. 4, p. 5; 6; 11).

The SMI site arranged for shipment and disposal of the hazardous waste which was performed on June 16, 1983. The items which were shipped on NJ Manifest #0117807 were 5 55-gallon drums of PCB transformer oil, 1 empty PCB contaminated cylindrical tank, 2 55-gallon drums of PCB contaminated waste oil, and 3 30-gallon drums of PCB contaminated waste oil (Ref. No. 13).

Air Pathway - There is no documentation which indicates that a release of contaminants to the air has occurred. An estimated 767,653 individuals reside within a four-mile radius of the site (0-0.25 mile, 800; 0.25-0.50 mile, 7,206; 0.50-1 mile, 33,361; 1-2 miles, 118,802; 2-3 miles, 213,823; 3-4 miles, 393,661) (Ref. No. 19). There are over 13 acres of wetlands within one mile of the site (0.25-0.50 mile, 1 acre; 0.50-1 mile, 12 acres (Ref. No. 3). Four habitats for the New Jersey State endangered species were identified within four miles of the site (Ref. Nos. 5; 18).

Summary

The Summit Metals Inc. site is a former recycler of transformers. In prior sampling events, PCB's have been detected in on-site soils and containers filled with residual oil. The SMI disposed of the oils and containers which were considered to be hazardous waste on June 16, 1983. The items which were shipped on NJ Manifest #0117807 were five 55-gallon drums of PCB transformer oil, one empty PCB contaminated cylindrical tank, two 55-gallon drums of PCB contaminated waste oil, and three 30-gallon drums of PCB contaminated waste oil. To date, there is no documentation in the site files which indicate that the contaminated soils have been removed from the site. On August 7, 1984, the USEPA entered into a Consent Agreement and Final Order with the facility. There are no analytical data available to confirm that groundwater or surface water were impacted by site contaminants. Groundwater is not used as a drinking water source within a four-mile radius of the site. Potable water is supplied by a surface water intake not located along the surface water pathway. There are no surface water intakes along the fifteen-mile surface water pathway. There are no residences, schools or day care facilities within 200 feet of the site. There are no analytical data which indicate a contaminant release to air has occurred.

Very truly yours,

LILLI M. GONZALEZ
SITE MANAGER

STEVEN T. MCNULTY
TASK LEADER

JOHN L. SPLENDORE, P.E.
WORK ASSIGNMENT MANAGER

This Report was conducted under the following USEPA Documentation Procedure

Guidance for Performing Site Inspections Under CERCLA Draft Publication 9345.1-0

ATTACHMENT 1

REFERENCES

1. U.S. Environmental Protection Agency (USEPA), Superfund Program, Comprehensive Environmental Response Compensation Liability Information System (CERCLIS), List 8: Site/Event Listing, pp. 134, March 16, 1993.

2. Four-Mile Vicinity Map for the Summit Metals Inc. site based upon U.S. Geological Survey Topographic Maps, 7.5 minute series, Quadrangles of "Jersey City, NJ-NY" 1967, photorevised 1981; "Elizabeth, NJ-NY," 1967, photorevised 1981; "Weehawken, NJ-NY" 1967, photorevised 1981; "Brooklyn, NY" 1967, photorevised 1979.

3. Fifteen-Mile Surface Water Pathway Map based on U.S. Department of the Interior, Fish and Wildlife Services, National Wetlands Inventory Maps, "Jersey City, NJ-NY" 1976; The Narrows, NY", 1976.

4. Site Inspection Report, Summit Metals Inc., Jersey City, Hudson County, New Jersey, Prepared by New Jersey State Department of Environmental Protection, April 10, 1984.

5. Liberty State Park Ecological Study, Final Report, Prepared for The Port Authority of New York and New Jersey, Prepared by Texas Instruments Incorporated, October 1976.

6. Hazardous Waste Investigation, Prepared by New Jersey Department of Environmental Protection, Division of Hazardous Waste, February 18, 1981.

7. Letter from Stablex-Reutter, Inc. to New Jersey Department of Environmental Protection, Bureau of Air Pollution, "Test Report No. S-1359", April 20, 1981.

8. Letter from Stablex-Reutter, Inc. to New Jersey Department of Environmental Protection, Solid Waste Division, "Test Report No. SR5810", May 22, 1981.

9. Memo from Arthur H. Gevirtz, USEPA Toxic Substances Inspection Section, To Summit Metals Inc. file, "April 15, 1981 PCB Inspection", May 19, 1981.

10. Hazardous Waste Investigation, Prepared by New Jersey Department of Environmental Protection, Division of Hazardous Waste, November 4, 1982.

11. Investigative Report, Prepared by Alphonse Iannuzzi, New Jersey Department of Environmental Protection, Division of Waste Management, Bureau of Field Operations, March 14, 1983.

12. Letter from Joseph A. Rogalski, New Jersey Department of Environmental Protection, Division of Waste Management, to Mr. Julius Brauer, Summit Metals Inc., "Penalty Settlement Offer", February 7, 1983.

13. Letter from George Hengst, Advanced Environmental Technology Corporation, to Mr. A. Iannuzzi, New Jersey Department of Environmental Protection, Division of Waste Management, June 17, 1983.

REFERENCES (CON'T)

14. Letter from Gregory T. Halbert, USEPA Office of Regional Counsel, to Paul Kahn, Esq., New Jersey Department of Environmental Protection, Office of Regulatory Services, "Consent Agreement and Final Order in Re Summit Metals Inc.", September 6, 1984.

15. Memorandum from Paul Kahn, Esq., New Jersey Department of Environmental Protection, Office of Regulatory Services, to Jorge Berkowitz, New Jersey Department of Environmental Protection, HSMA, March 8, 1984.

16. New Jersey Department of Environmental Protection, Division of Water Resources, "Well Record for Liberty State Park", July 3, 1982.

17. New Jersey Department of Environmental Protection, Office of Land and Water Planning, "Surface Water Quality Standards", April 1994.

18. Project Note: To Summit Metals Inc. file from Lilli Gonzalez, Malcolm Pirnie, Inc., April 6, 1995. Subject: Sensitive Environments.

19. Project Note: To Summit Metals Inc. file from Lilli Gonzalez, Malcolm Pirnie, Inc., March 31, 1995. Subject: Four-mile Radius Populations.

20. New Jersey Department of Environmental Protection, Bureau of Safe Drinking Water, "Surface Water Intake Locations", March 1992.

21. Telcon Note: Conversation between Gary Bielen, Malcolm Pirnie, Inc., and James Gaffney, New Jersey Department of Environmental Protection regarding "Wellhead Protection Areas", December 16, 1994.

22. Project Note: To Summit Metals Inc. file from Lilli Gonzalez, Malcolm Pirnie, Inc., March 31, 1995. Subject: Drinking Water Sources within four miles.

23. New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay, and Delaware Bay, Prepared for New Jersey Department of Environmental Protection, Division of Fish, Game and Wildlife, Marine Fisheries Administration, October 1988.

24. New Jersey Fish & Wildlife Digest, "How to Reduce Consumer Exposure to Fish Contaminated with Toxic Chemicals", April 1992.

25. Appraisal of Water Resources in the Hackensack River Basin, New Jersey, Water Resources Investigations 76-74, Prepared by L. D. Carswell, U.S. Geological Survey, June 1976.

REFERENCE NO. 1

SELECTION:
SEQUENCE: STATE, CNTY CODE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME STREET CITY COUNTY CODE AND NAME	STATE ZIP CONG DIST.	OPABLE UNIT	EVENT TYPE	EVENT DESC	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NJD981187016	SUMMIT METALS INC. 36-44 AETNA STREET JERSEY CITY 017 HUDSON	NJ 07304	00	DS1 PA1 SI1		02/20/86	01/15/86 02/15/86 03/20/86	STATE(FUND) STATE(FUND) STATE(FUND)
NJD064263617	SYNCON RESINS 77 JACOBUS AVE KEARNY 017 HUDSON	NJ 07032	00	RS1 RS2 IR1 DS1 PA1 HR1 NP1 NF1 SI1 IM1		03/27/90 10/17/91 12/20/82 07/01/82 12/20/82	09/14/90 10/28/91 04/10/84 07/01/82 12/01/82 07/23/82 09/08/83 08/01/82	EPA (FUND) EPA (FUND) STATE(FUND) STATE(FUND) EPA (FUND) EPA (FUND) EPA (FUND) EPA (FUND) STATE(FUND)
			01	RM1 AR1 WP1 CO1 RU1 RD1 RA1 AS1		08/02/91 12/20/82 12/20/82 06/26/87 05/23/89	03/31/83 05/15/83 09/29/86 09/29/86 02/28/89 05/01/83	EPA (FUND) STATE(FUND) STATE(FUND) STATE(FUND) STATE(FUND) EPA (FUND)
NJD980530216	TATHAM BROS 82 MORGAN ST. JERSEY CITY 017 HUDSON	NJ 07302	00	DS1 PA1 SI1 [redacted]		04/01/91	06/01/81 02/01/83 06/26/91	EPA (FUND) EPA (FUND) EPA (FUND)
NJD067505956	TEXACO USA /A DIV OF TEXACO INC AVE A & WEST FIRST ST BAYONNE 017 HUDSON	NJ 07002	00	DS1 PA1 SI1 [redacted] SI2 [redacted]		08/01/85 04/01/86	06/01/81 06/01/84 08/26/85 04/04/86	EPA (FUND) STATE(FUND) EPA (FUND) EPA (FUND)
NJD981490378	TURCO INDUSTRIAL PARK 590 BELLEVILLE TURNPIKE KEARNY 017 HUDSON	NJ 07032	00	DS1 PA1 SI1		06/27/88 07/01/91	06/27/88 06/30/88 09/25/91	STATE(FUND) STATE(FUND) EPA (FUND)

REFERENCE NO. 2

SITE LOCATION

TITLE:	FOUR–MILE VICINITY MAP
SITE NAME:	SUMMIT METALS INC. JERSEY CITY, HUDSON COUNTY, NEW JERSEY
DATE: 4/30/95	SCALE: 1" = 2000'
REPORT NUMBER: 8003–411	
USGS TOPO NAME:	JERSEY CITY, NEW JERSEY–NEW YORK

SCALE 1:24000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

REFERENCE NO. 3

TITLE:
FIFTEEN–MILE SURFACE WATER PATHWAY MAP

SITE NAME:
SUMMIT METALS INC.
JERSEY CITY, HUDSON COUNTY, NEW JERSEY

DATE: 4/30/95 SCALE: 1" = 2000'

REPORT NUMBER: 8003–411

USGS TOPO NAME:
JERSEY CITY, NEW JERSEY–NEW YORK

REFERENCE NO. 4

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Summit Metals Inc	36-44 AETNA Street				
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 COUNTY**	**07 COUNTY CODE**	**08 CONG. DIST.**
Jersey City	NJ	07304	Hudson		

09 COORDINATES LATITUDE 40 43 49.__ LONGITUDE __74 03 05.__

10 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
4 10 84 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1965 (BEGINNING YEAR) Present (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR _____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☒ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Robert Hayton	Env. Specialist	DEP	(609)292-121
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO.**
Robert Kunze	Senior Env. Specialist	DEP	(609)292-12
Kathleen Van Hook	Env. Specialist	DEP	(609)292-12
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Julius Brauer	Owner	36-44 AETNA ST.	(201)434-34
		Jersey City, N.J.	( )
			( )
			( )
			( )
			( )

BLOCK 60 LOT 19 M

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1:30 PM	Clear 50° F. Wind SE 15 MPH.

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Robert Hayton	NJDEP/Hazardous Site Mitigation Admin	609)292-121

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Robert Hayton	HSMA	NJDEP	292-1210	4 10 84 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER (Specify) _____
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS _____
- CUBIC YARDS _____
- NO. OF DRUMS 4

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☒ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	100	gallons	on site at time of inspection
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OIW	PCB		Drums; Transformers		
			ATTACHMENT C		
			DATES:		
			1/21/81	510	ppm
			2/5/81	310	ppm
			2/15/81	2200	ppm
			2/15/81	1	ppm

V. FEEDSTOCKS (See Appendix for CAS Number(s))

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

DWM - Hazardous Waste Investigation 2/15/81 ATTACHMENT C

EPA FORM 2070-13(7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
PCB has been detected in soil samples.

01 [X] B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Facility is located next to Liberty State Park. Runoff from site will enter morris canal basin in times of heavey rain and flooding. Facility is located in a flood hazard area

01 [X] C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
PCB oil was burned in furnace on S. Te.
ATTACHMENT F

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Soil is oil soaked throughout facility. Fence gate at front of property does not secure property

01 [X] F. CONTAMINATION OF SOIL — 02 [X] OBSERVED (DATE: 5/19/81) — ☐ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 27,213 FT² (Acres) — 04 NARRATIVE DESCRIPTION
Soil samples taken at time of EPA inspection showed high concentrations of PCB's. 1270 ppm
ATTACHMENT F

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 [X] H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 3 — 04 NARRATIVE DESCRIPTION
3 workers were on site at time of inspection.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continue)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☒ OBSERVED (DATE: 4/10/84) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION There were 4 drums containing PCB oil that were in very poor condition. Transformer shells were on the waste pile with residual oil dripping out of them.

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS There are approximately 6-10 Large transformers on site that are, according to Mr. Brauer, still soaked and filled with oil.

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

HSMA Inspection - 4/10/84
Owin - Hazardous Waste Investigation 2-16-81

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☒ C. DRUMS, ABOVE GROUND	4	55 gal
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☒ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☒ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

☒ A. BUILDINGS ON SITE
small metal Buildings
no heat

06 AREA OF SITE

27,213 FT² (Acres)

07 COMMENTS Transformers have oil pumped out of them and put into drums that are stored on site. Mr Brauer told Inspectors that the oil used to be burned in his furnace The empty transformers are thrown carelessly on a scrap pile where much of the Residue oil drips onto the ground.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☒ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC. Transformers and 55 gallon drums are used to store the PCB oil. Transformers are supposed to come onto his property empty BUT Mr Brauer STATED THAT THIS never happens

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS The fence that surround the facility is not secure. Front gate does not work.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

HSMA - Inspection 4/10/84

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. DRINKING WATER SUPPLY Jersey City water supply is approximately 50 miles from S.T.

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL
COMMUNITY	A. X	B. ☐
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS	ENDANGERED	AFFECTED	MONITORED
	A. ☐	B. ☐	C. ☐
	D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE
A. 50 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 0

03 DISTANCE TO NEAREST DRINKING WATER WELL > 3 mi. (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
5 (ft)	EAST	_____ (ft)	_____ (gpd)	☐ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings) Jersey City Health Department stated that a car wash on RT 440 has a commercial well

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS	☒ YES ☐ NO	COMMENTS Ground water discharges into New York Bay

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☒ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Morris Canal Basin which leads to New York Bay	☐	400 FT (mi)
	☐	_____ (mi)
	☐	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 33529 NO. OF PERSONS	B. _____ NO. OF PERSONS	C. _____ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 1/4 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 100 Feet (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} – 10^{-8} cm/sec ☐ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-4} – 10^{-3} cm/sec ☒ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
_____ (ft)	_____ (ft)	_____	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE		
		SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
12 (in)	2.7 (in)	<1% %		<1% %

09 FLOOD POTENTIAL

SITE IS IN 100 YEAR FLOODPLAIN

10

☒ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. < 1/2 (mi)	B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS	
		PRIME AG LAND	AG LAND
A. 100 Feet (mi)	B. < 1/2 (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF Robert Hayton HSMA DEP.
(Name of organization or individual)

03 MAPS
☐ YES
☐ NO

04 LOCATION OF MAPS

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. CURRENT OWNER(S) / PARENT COMPANY (If applicable)

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
Julius Brauer			

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
36-44 Aetna St.			

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
Jersey City	NJ.	07304			

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first) / IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Jersey City TAX office

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. CURRENT OPERATOR *(Provide if different from owner)*

01 NAME	02 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE
05 CITY / 06 STATE / 07 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY *(If applicable)*

10 NAME	11 D+B NUMBER
12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	13 SIC CODE
14 CITY / 15 STATE / 16 ZIP CODE	

III. PREVIOUS OPERATOR(S) *(List most recent first; provide only if different from owner)*

PREVIOUS OPERATORS' PARENT COMPANIES *(If applicable)*

01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		
01 NAME	02 D+B NUMBER	10 NAME	11 D+B NUMBER
03 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	04 SIC CODE	12 STREET ADDRESS *(P.O. Box, RFD #, etc.)*	13 SIC CODE
05 CITY / 06 STATE	07 ZIP CODE	14 CITY / 15 STATE	16 ZIP CODE
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD		

IV. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☒ G. WASTE DISPOSED ELSEWHERE — 02 DATE 6/16/83 — 03 AGENCY _____
04 DESCRIPTION
Shipped To AEC Jacksonville Florida by Manifest See ATTACHMENT K

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analyses, reports)

DWM - Enforcement File, PAR-Troy office

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION [X] YES [ ] NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

Administrative complaint Filed against Summit metals in June, 1981 charging company with four (4) violations of the PCB Regulations under TSCA. The complaint proposed a civil penalty of $35,000. A Settlement was reached in march 1982 where Summit agreed To properly dispose of all PCB contaminated oil on its premises in Lieu of a $5,000 civil penalty That was also agreed on.

ATTAchmenT L - complaint and Notice of opportunity for Hearin and Consent agreement and Final order

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

USEPA - ATTAchmenT L

EPA FORM 2070-13 (7-81)

REFERENCE NO. 5

LIBERTY STATE PARK
ECOLOGICAL STUDY

Final Report

Prepared for

THE PORT AUTHORITY
OF
NEW YORK AND NEW JERSEY

by

TEXAS INSTRUMENTS INCORPORATED
Ecological Services
P.O. Box 5621
Dallas, Texas 75222

October 1976

ATTACHMENT 6

services group

tected native plants (New York State, 1974). Smooth cordgrass (Spartina alterniflora) is considered the most important plant species on the park site, and the tidal salt marsh is the most important vegetation community. Coverage by Spartina alterniflora, which is generally restricted to areas below mean high tide (Taylor, 1938), is a useful measure of the area submerged at an "average" high tide; the phragmites bordering Spartina in many areas of the park site tidal marsh is indicative of elevations or restricted tidal flooding.

Values of marine wetlands include the following (O'Connor and Terry, 1972):

- Protection of inland areas against major storms
- Essential habitat for a variety of invertebrates, fishes, birds, and mammals
- Production of plant and animal food for animals living in the marshes and adjacent waters
- Chemical and biological transformations of waste products and entrapment of suspended sediments
- Recreational and educational sites of aesthetic value for hunting, fishing, and study of natural history and ecology

The tidal marsh on the park site possesses all of these except the protective value. As a wildlife habitat, the marsh has been discussed. The recreational/educational value should be more fully realized as a greater number of people view the marsh.

The aboveground net annual production of Spartina alterniflora has been estimated by several workers. In the Hempstead Bay marshes of Long Island, Udell et al (1969) estimated an annual production of 3.7 and 2.3 tons/acre for tall- and short-growth forms. Nixon and Oviatt (1973) in Rhode Island estimated production at 3.7 tons/acre and cited Good in New Jersey as estimating 7.1 tons/acre, an estimate similar to Spartina production in a Virginia estuary (Wass and Wright, 1969). Potera (1973) estimated

a) Onsite Waterfowl Survey

Sightings of 10,783 individuals of 18 waterfowl species were recorded during 34 ground surveys in the vicinity of Liberty State Park (Table III-32). Approximately three-fourths of the sightings were either Canvasback (Aythya valisineria) or Greater Scaup (A. marila). The greatest number of waterfowl species (11) and individuals (1208), of which 84% were Canvasback and 6% were Greater Scaup, was observed on 12 January (Table III-33).

Table III-32

Number of Individuals of 18 Waterfowl Species Observed during 34 Ground Surveys in Vicinity of Liberty State Park, September 1975-June 1976

Species	Number
Canada Goose	3
Brant	2
Mallard	90
Black Duck	573
Gadwall	646
Pintail	98
Green-winged Teal	3
Blue-winged Teal	2
American Wigeon	679
Redhead	1
Canvasback	5530
Greater Scaup	2334
Lesser Scaup	9
American Goldeneye	9
Bufflehead	714
Ruddy Duck	1
Hooded Merganser	10
Red-breasted Merganser	6
Unidentified	73
Total	10,783

Many of the 16 duck species observed in the study area exhibited definite seasonal trends. Mallards (Anas platyrhynchos) were more common between late September and late November, when they averaged 4.6 individuals/survey; their occurrence was sporadic from December through mid-March. The Black Duck (A. rubripes), the only waterfowl species to occur during all 34 surveys, ranged from 1 (8 March) to 60 (24 November); six of the surveys (between 10 October and 8 December) each yielded 30 or more. The Gadwall (A. strepera) was not sighted until 3 November but was present during every survey between 24 November and 3 May, reaching a maximum of 72 on 22 December. The Pintail (A. acuta) occurred only during a 2-week period in early January. Teal were sighted twice on the onsite water body: Green-winged (A. crecca) on 23 September and Blue-winged (A. discors) on 15 March.

Differences between fall populations and spring populations of the American Wigeon (A. americana) were even greater than those of the Black Duck or Gadwall, the other major dabbling duck species. American Wigeon averaged 39 individuals/survey between late September and early December. On each of six dates from mid-February through late March, fewer than four (average) were counted.

Table III-33
Numbers of Waterfowl Species and Individuals and Percent Composition of Canvasback and Greater Scaup during 34 Ground Surveys in Vicinity of Liberty State Park, September 1975-June 1976

	Species	Individuals	Canvasback (%)	Greater Scaup (%)
Sep 23	4	58	0	0
Oct 2	2	34	0	0
10	4	68	0	0
13	4	40	0	0
20	3	57	0	0
27	3	90	0	0
Nov 3	6	105	0	0
10	4	126	0	0
17	5	113	35	0
24	6	340	37	0
Dec 1	6	352	18	42
8	7	524	58	15
15	5	218	42	0
22	7	347	51	6
29	7	580	67	0
Jan 5	7	944	85	2
12	11	1208	84	6
19	7	591	87	1
26	6	696	95	<1
Feb 6	8	575	71	10
9	7	562	69	14
16	6	275	37	22
23	6	406	42	47
Mar 1	6	246	11	58
8	8	372	13	69
15	7	540	8	75
22	7	516	18	65
29	6	396	3	82
Apr 5	7	176	20	30
12	6	170	9	52
May 3	5	17	0	6
24	2	3	0	0
Jun 7	3	30	0	0
21	1	6	0	0
Total	18	10,783	51	22

The Canvasback was first observed in the vicinity of the park on 17 November; it proved to be the predominant species from 8 December through 16 February, accounting for more than 80% of the duck count in January. The Canvasback also was the most common duck recorded (6525 individuals) on 22 December 1975 in the Lower Hudson area that included the Liberty State Park site (Ryan and Toffic, 1976); in that count, there were 1717 more Canvasbacks than Greater Scaups. During three previous (1972-74) Audobon "Christmas counts", Greater Scaup had been more common by an average of 1726 individuals. Approximately 25% of the Lower Hudson count area comprises rivers and bays, including the East River east to the Whitestone Bridge. Other common duck species having higher counts during December 1975 than during any of the three previous years were Mallard (52% higher), Black Duck (29% higher), Gadwall (69% higher), Pintail (106% higher), American Wigeon (116% higher), Canvasback (2% higher), Bufflehead (Bucephala albeola) (63% higher), and Ruddy Duck (Oxyura jamaicensis) (228% higher). Ruddy Duck numbers were markedly up also in other metropolitan New York counts (Andrle, 1976).

Canvasbacks that had been dyed during fall and winter for fall migrational-route and winter local-movement studies were observed in the study area on 3, 12, and 26 January. Sightings of color-marked birds in the study area were reported to the U.S. Fish and Wildlife Service (Figure III-8) and an acknowledgment received (Figure III-9). The food habits of the Canvasback are discussed later in this section.

Greater Scaup numbers in the study area were approximately 150 in early December and then dropped to less than 100 until 23 February, when they outnumbered Canvasbacks. During March, they comprised more than half the site's duck population (Table III-33).

Bufflehead showed a residence pattern similar to that of Gadwall although differing in behavior and habitat preference. Both were first sighted in the vicinity of the park on 3 November, peaking in late December and remaining through late April. Bufflehead were generally more common in February than were Gadwall.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
NORTHERN PRAIRIE WILDLIFE RESEARCH CENTER
JAMESTOWN, NORTH DAKOTA 58401

February 18, 1976

Noel J. Cutright, Ph.D.
Terrestrial Ecologist
Ecological Services
Texas Instruments
P.O. Box 5621
Dallas, Texas 75222

Dear Dr. Cutright:

We received your report of the color marked canvasbacks near Ellis Island. This last fall (1975) we used three colors, red in late October, yellow in early November, both at LaCrosse, Wisconsin. In late November we used blue at Keokuk, Iowa. Our interest as far as the fall banding on the Mississippi, is in canvasback migrational routes, movements, wintering ground destinations and habitat associations. Red and yellow canvasbacks are being reported in Maryland, New York, and New Jersey, while the blue have moved into Tennessee and Louisiana. At this time our data is incomplete but should be available soon. We sincerely appreciate your assistance and cooperation.

Enclosed you will find a reprint from Ducks Unlimited and several observation cards for future sightings.

Sincerely yours,

Bruce A. Hanson

Bruce A. Hanson
Biological Technician

Enclosures

PS. Please express our appreciation to Mr. Robert Kaberbeck for his observations.

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Save Energy and You Serve America!

Figure III-9. USFWS Acknowledgment of TI's Report of Color-Marked Canvasbacks Observed in Vicinity of Liberty State Park

TEXAS INSTRUMENTS
INCORPORATED
POST OFFICE BOX 5621 • DALLAS, TEXAS 75222
Services Group

3 February 1976

Migratory Bird & Habitat
Research Lab
Patuxent Wildlife Research Center
Laurel, Maryland 20810

Sirs:

I would like to report the sightings of three color-marked Canvasbacks. We are currently conducting weekly waterfowl population surveys on the Hudson River near the Statue of Liberty. Surveys were initiated in October, 1975 and will continue into spring 1976. The three sightings are:

(1) Noel J. Cutright - observer
January 3, 1976 - date 845 - time
Along New Jersey shore - Hudson River - 1/2 mi NW of Ellis Island - location
light yellow tinge - color
~ 250 canvasback in tight raft, not feeding
3:2 - M/F ratio

(2) Robert Kakerbeck
January 12, 1976 920
same location
red
660 canvasback & 40 scaup - close to N.J. shore - no feeding

(3) Robert Kakerbeck
January 12, 1976 945
same location
light yellow tinge (same bird as #1?)
250 canvasbacks & 20 scaup in loose group, ~ 25 birds feeding
5:1 - M/F ratio

I would appreciate any recent reports on the canvasback project.

Sincerely,
Noel Cutright

Noel J. Cutright, Ph.D.
Terrestrial Ecologist
Ecological Services

jb

13500 NORTH CENTRAL EXPRESSWAY • DALLAS • 214-238-2011 • TELEX 7-3324 • TWX 910-867-4702 • CABLE: TEXINS

Figure III-8. TI's Report to USFWS of Color-Marked Canvasbacks Observed in Vicinity of Liberty State Park

The 11 observation points on the park site (Figure II-5) vary greatly in number of waterfowl (Table III-34). Station 11, for example, exhibited only 13 birds, whereas station 9 contained 6742, or 63% of the total sightings. No other station produced more than 10% of the total sightings, and at four stations less than one-third of the surveys yielded sightings (station 1 in the western half of Black Tom Channel; station 5 in the tidal marsh, which was frozen during nine surveys between 22 December and 15 February; and stations 10 and 11 overlooking Upper New York Bay at the northern end of the park site).

Table III-34

Number of Surveys Exhibiting Waterfowl and Number of Waterfowl at Each of 11 Stations on Liberty State Park Site

Waterfowl Station No.*	No. of Surveys	No. of Individuals
1	8	44
2	25	931
3	18	415
4	30	939
5	11	60
6	33	1023
7	20	228
8	18	277
9	27	6742
10	7	111
11	6	13
Total	34	10,783

*See Figure II-5 for station location on Liberty State Park site.

Apparently, waterfowl are benefited by an irregular shoreline with protected inlets and wooden structures extending out from shore, as indicated by comparing counts at stations 2 and 3; at the former, which is more protected, waterfowl occurred more frequently, in greater numbers, and with greater species diversity. The Bufflehead, which frequents open water more than do the dabbling (puddle) duck species, comprised 23% of the total sightings at station 2 and 62% at station 3.

Stations 4 and 6, both of which are near the tidal marsh, exhibited similar populations and species compositions and frequent interchanges of ducks; combined, the two stations were the second most important location for waterfowl on the Liberty State Park Site in 1975-76. The two stations differed by 84 birds because of greater waterfowl usage near station 6 between 23 September and 20 October (166 vs 16 birds during five surveys); conversely, the area near station 6 was affected by drift ice more than was station 4, causing it to yield only four individuals on two mid-January surveys while station 4 was exhibiting 127.

A few ducks were usually present on the onsite water body (station 7) except during the midwinter freeze. Numbers were greatest in late November-early December and during mid- to late March.

Seventy-six percent of the Canvasbacks were observed at station 9, where they were usually tightly rafted near shore. Greater Scaup also were most common at this location. The area was protected by nearby piers and a curving shoreline, and a food source was nearby (as discussed later).

TI observers made five sightings of two loon species, all in offshore waters of Black Tom Channel. The Horned Grebe also was most common in Black Tom Channel (86% of the sightings); 44 of the 65 sightings were at station 2. Pied-billed Grebe and Double-crested Cormorant sightings occurred primarily at station 9. All but one of the 30 American Coot sightings were at stations 4, 7, and 2.

b) Offsite Waterfowl Survey

Offsite surveys consisted of 15 aerial waterfowl counts (with Canvasback populations of primary interest) as well as waterfowl observations made from the Caven Point military installation pier in the Caven Cove and Caven Channel areas south of the Liberty State Park site. There were three aerial surveys in October, two in November, two in December, two in January,

usually is more abundant wherever there are concentrations of people and buildings. House mice eat anything edible and are prolific breeders (Burt and Grossenheider, 1964). Populations of house mice may surpass 300 individuals per acre (Lidicker, 1966). Such large populations are often attained where buildings provide suitable living places. The house mouse was present at each location on the Liberty State Park site and proved to be the most abundantly trapped species; captures per 100 trap nights ranged from five individuals at location N9 to 31 at location S1 (Figure III-10). House mouse capture levels so influenced total capture levels that locations N9 and S1 had the fewest and greatest number of total small mammals per 100 trap nights. The sex ratio (female:male) of captured house mice was 51:49.

Table III-36

Numbers of Small Mammals per 100 Trap Nights in Six Sampling Locations in Liberty State Park Study Area, September 1975

	Sampling Location*					
Common Name	S1	S2	C4	C5	N9	N10
Meadow vole	3	2	0	1	2	0
Norway rat	1	0	0	2	0	0
House mouse	31	12	12	10	5	17

*Shown in Figure II-2

Distances that mice moved along a trap line were determined using recapture data. Among all six trap lines, the average distance moved between captures over the 4 days was 41.4 ft. Lidicker (1966) reported a 2-week recapture mean distance of 31.3 ft. The distances also were within the range given by DeLong (1967). Because of the almost constant rain during the trapping period, some flooding occurred and may have caused increased local movements. House mice also may be migratory at certain times, traveling distances as great as 2,250 ft (Caldwell, 1964).

On the Liberty State Park site, wooden debris was available in quantity at all sampling locations, offering important cover to the house mouse. While food, weather, and other animals are among the primary environmental components influencing most small-mammal distribution, a place to live may be most important to the house mouse (Briese and Smith, 1973). Although populations in the Liberty State Park study area may have reached 100-150 individuals per acre in a few locations, they were considerably lower over most of the site.

The meadow vole (Microtus pennsylvanicus) prefers grasslands, where its major dietary items are various species of monocots (McCloskey and Fieldwick, 1975). Bowker and Pearson (1975) demonstrated that voles have a strong habitat orientation for areas of dense vegetation in New Jersey grasslands. Vegetative ground cover on the Liberty State Park site generally ranged between 35-45%. Grass densities also were extremely patchy in most areas (Table III-37). The sparse ground cover and patchy distribution of grasses undoubtedly contributed to the small meadow vole population on the study area. The meadow vole was captured in four of the six trapping locations, with the number of individuals per 100 trap nights ranging from one to three (Table III-36).

Table III-37

Grass Densities (No./m^2) in Five Consecutive Plots in Four Sampling Locations on Liberty State Park Site, June 1976

Sampling Location	Plot a	b	c	d	e
C5	960	158	85	0	0
N8a	138	224	195	0	0
N9	355	37	5	4	177
N10	48	647	350	238	111

The Norway rat (Rattus norvegicus), like the house mouse, is an introduced species. It probably has the worst reputation of all New Jersey

Table D-1

Checklist of Plant Species Observed on Liberty State Park Site, September 1975-June 1976*

Scientific Name	Common Name
Equisetaceae	
Equisetum sp.	Horsetail
Polypodiaceae	
Onoclea sensibilis	Sensitive fern
Typhaceae	
Typha angustifolia	Narrow-leaved cattail
T. latifolia	Broad-leaved cattail
Gramineae	
Agrostis hyemalis	Bent grass
Andropogon virginicus	Broom sedge
Calamagrostis canadensis	Bluejoint
Danthonia sp.	Wild oat grass
Digitaria sanguinalis	Large hairy crabgrass
Festuca elatior	Meadow fescue
Panicum dichotomiflorum	Fall panic grass
Panicum sp.	Panic grass
Paspalum sp.	Paspalum
Phragmites communis	Reed grass (phragmites)
Poa pratensis	Kentucky bluegrass
Setaria sp.	Foxtail
Spartina alterniflora	Smooth cordgrass
Cyperaceae	
Carex spp.	Sedge
Cyperus odoratus	Galingale
Eleocharis sp.	Spike rush
Scirpus sp.	Bulrush
Commelinaceae	
Commelina communis	Asiatic dayflower
Tradescantia virginiana	Spiderwort
Liliaceae	
Asparagus officinalis	Asparagus
Iridaceae	
Sisyrinchium sp.	Blue-eyed grass
Salicaceae	
Populus alba	White poplar
P. deltoides	Eastern cottonwood
Betulaceae	
Betula papyrifera	Paper birch
Moraceae	
Celtis occidentalis	Hackberry
Polygonaceae	
Polygonum aviculare	Prostrate knotweed
P. cuspidatum	Japanese knotweed
P. persicaria	Lady's-thumb
P. prolificum	Knotweed
P. scandens	Climbing false buckwheat
Rumex acetosella	Sheep sorrel
R. crispus	Curled dock
Chenopodiaceae	
Atriplex sp.	Orache
Chenopodium album	Lamb's-quarters
Nyctaginaceae	
Mirabilis nyctaginea	Four-o'clock
Phytolaccaceae	
Phytolacca americana	Pokeweed
Caryophyllaceae	
Cerastium vulgatum	Mouse-ear chickweed
Saponaria officinalis	Bouncing bet
Silene cucubalus	Bladder campion
Berberidaceae	
Berberis thunbergii	Japanese barberry
Cruciferae	
Barbarea vulgaris	Winter cress
Lepidium virginicum	Peppergrass
Sisymbrium altissimum	Tumble mustard
Rosaceae	
Fragaria virginiana	Wild strawberry
Potentilla recta	Rough-fruited cinquefoil
P. simplex	Common cinquefoil
Prunus serotina	Black cherry
Rosa multiflora	Multiflora rose
Rubus sp.	Bramble
Spiraea latifolia	Steeplebush
Fabaceae	
Medicago sativa	Alfalfa
M. lupulina	Black medick
Melilotus officinalis	Yellow sweet clover
Robinia pseudoacacia	Black locust
Fabaceae (Contd)	
Trifolium hybridum	Alsike clover
T. pratense	Red clover
T. repens	White clover
Geraniaceae	
Geranium carolinianum	Carolina cranesbill
Oxalidaceae	
Oxalis stricta	Yellow wood sorrel
Aceraceae	
Acer rubrum	Red maple
Anacardiaceae	
Rhus copallinum	Dwarf (winged) sumac
R. typhina	Staghorn sumac
Vitaceae	
Parthenocissus quinquefolia	Virginia creeper
P. tricuspidata	Boston ivy
Hypericaceae	
Hypericum perforatum	Common St. John's-wort
Lythraceae	
Lythrum salicaria	Purple loosestrife
Onagraceae	
Oenothera biennis	Common evening primrose
Umbelliferae	
Daucus carota	Queen Anne's lace (wild carrot)
Pastinaca sativa	Wild parsnip
Apocynaceae	
Apocynum medium	Intermediate dogbane
Asclepiadaceae	
Asclepias syriaca	Common milkweed
Convolvulaceae	
Convolvulus arvensis	Field bindweed
Solanaceae	
Datura stramonium	Jimsonweed
Solanum nigrum	Common nightshade
Scrophulariaceae	
Linaria vulgaris	Butter-and-eggs
Verbascum blattaria	Moth mullein
V. thapsus	Common mullein
Plantaginaceae	
Plantago lanceolata	English plantain
P. major	Common plantain
Caprifoliaceae	
Sambucus canadensis	Common elder
Compositae	
Achillea millefolium	Yarrow
Ambrosia artemisiifolia	Common ragweed
Anaphalis margaritacea	Pearly everlasting
Arctium lappa	Great burdock
A. minus	Common burdock
Artemisia annua	Annual wormwood
A. vulgaris	Mugwort
Artemisia sp.	Wormwood
Aster ericoides	Heath aster
Aster sp.	Aster
Baccharis halimifolia	Groundsel-tree
Bidens aristosa	Tickseed sunflower
Centaurea sp.	Knapweed
Chrysanthemum leucanthemum	Ox-eye daisy
Cichorium intybus	Chicory
Cirsium arvense	Canada thistle
C. vulgare	Bull thistle
Crepis sp.	Hawksbeard
Erigeron annuus	Daisy fleabane
Eupatorium perfoliatum	Boneset
E. rugosum	White snakeroot
Helianthus tuberosus	Jerusalem artichoke
Hieracium canadense	Canada hawkweed
Lactuca sp.	Wild lettuce
Matricaria matricarioides	Pineapple-weed
Rudbeckia hirta	Black-eyed susan
Solidago altissima	Tall goldenrod
S. graminifolia	Lance-leaved goldenrod
S. sempervirens	Seaside goldenrod
Solidago sp.	Goldenrod
Taraxacum officinale	Common dandelion
Tragopogon pratensis	Yellow goat's-beard

*Does not include plant species planted during the spring and summer of 1976 on the newly developed park portion of the park site.

Table D-2

Annotated List of Amphibian and Reptile Species Observed on Liberty State Park Site, September 1975-June 1976

Scientific Name	Common Name	Comments
Bufo woodhousei	Fowler's toad	This small toad species was commonly observed on the park site in September and June.
Chrysemys picta	Painted turtle	One individual sunning on debris in Upper New York Bay near the tidal marsh was sighted in early June 1976.

Table D-3

Annotated List of Bird Species Observed on Liberty State Park Site, September 1975-June 1976

Scientific Name	Common Name	Status*	Comments
Gavia immer	Common Loon	Uncommon migrant; rare in winter.	One individual was observed near Caven Point on 5 January 1976.
Gavia stellata	Red-throated Loon	Rare migrant and in winter.	Five observations were recorded in Upper New York Bay in November and early December 1975.
Podiceps auritus	Horned Grebe	Common migrant and in winter.	From 10 November through 5 April, the maximum number observed in the vicinity of the Liberty State Park site was 15 on 24 November, 22 December, and 16 February.
Podilymbus podiceps	Pied-billed Grebe	Uncommon migrant and in summer; rare in winter.	This small grebe was observed on six occasions between 3 January and 12 April 1976.
Phalacrocorax auritus	Double-crested Cormorant	Abundant spring migrant; common fall migrant; rare in summer.	Seven individuals were observed on 20 October; the spring maximum was 119 on 12 April; on 21 June 1976, 19 birds were still present.
Ardea herodias	Great Blue Heron	Common fall migrant; uncommon spring migrant and in winter; rare in summer.	This large heron was observed on the study area in September, October, and April, with only one individual being sighted on any one date.
Butorides virescens	Green Heron	Common migrant and in summer; rare in winter.	One individual was sighted near the onsite waterbody on 23 September and another at the same location and in the tidal marsh on 7 June 1976.
Egretta thula	Snowy Egret	Abundant fall migrant; common spring migrant and in summer; uncommon in winter.	This wading bird species was observed feeding in the tidal marsh on the study area during fall and spring; the maximum was five on 5 April 1976.
Nycticorax nycticorax	Black-crowned Night Heron	Abundant migrant and in summer; common in winter.	Individuals were seen in the tidal marsh on the study area during September-December and again in June; the maximum was 14 on 3 November 1975.
Plegadis falcinellus	Glossy Ibis	Abundant migrant and in summer; rare in winter.	Observations occurred in September, May, and June. The maximum, six, occurred in the study area's tidal marsh on 24 May and 21 June 1976.
Branta canadensis	Canada Goose	Abundant fall migrant; common spring migrant; uncommon in summer and winter.	There were seven sightings between 10 October and 3 November, with a maximum of four occurring off Caven Point on 27 October 1976. On 12 April 1976, 30 were observed on the Caven Cove beach.
Branta bernicla	Brant	Abundant migrant and in winter; uncommon in summer.	A pair were seen during the first week of June at several locations along the Liberty State Park shoreline.
Chen caerulescens	Snow Goose	Common migrant; uncommon in winter; rare in summer.	Nine birds were observed on Upper New York Bay near the study area on 8 March, and a flock of 177 of the white morph flew northward over the site on 6 April 1976.
Anas platyrhynchos	Mallard	Abundant throughout the year.	Mallards, the first of seven dabbling duck species observed on the study area, occurred during every month from September 1975 through June 1976. A maximum of 10 was observed on the onsite waterbody on 21 September 1975.
Anas rubripes	Black Duck	Abundant throughout the year.	Like the Mallard, the Black Duck was observed in every month, with the maximum of 60 occurring on 24 November.
Anas strepera	Gadwall	Common migrant and in summer; uncommon in winter.	Gadwalls were first observed in November and continued to be regular through early May, with the maximum of 72 occurring on 22 December 1975.
Anas acuta	Pintail	Abundant fall migrant; common in winter; uncommon spring migrant; rare in summer.	Pintails were sighted only in January and early February; a maximum of 201 were counted from the Liberty State Park site south to Caven Point.
Anas crecca	Green-winged Teal	Common migrant; uncommon in summer and winter.	This small duck was observed only in September when there were three on the onsite waterbody.

Table D-3 (Contd)

Scientific Name	Common Name	Status*	Comments
Anas discors	Blue-winged Teal	Common migrant; uncommon in summer; rare in winter.	Two individuals were observed on 15 March 1976.
Anas americana	American Wigeon	Abundant migrant and in winter; rare in summer.	Wigeons were observed regularly from September until early May, with the maximum being 123 on 27 October 1975.
Aythya americana	Redhead	Uncommon migrant and in summer.	Two individuals were seen on 12 January 1976.
Aythya collaris	Ring-necked Duck	Uncommon migrant; rare in summer.	Two individuals were observed off Caven Point on 22 December 1975.
Aythya valisineria	Canvasback	Abundant fall migrant and in winter; common spring migrant; rare in summer.	On 27 October, an estimated 500 birds were observed in Constable Point Bay. From the Liberty State Park study area, Canvasbacks were first sighted on 17 November; by early January, the population had increased to a maximum of more than 1000 birds. The species last appeared on 12 April 1976.
Aythya marila	Greater Scaup	Abundant migrant and in winter; uncommon in summer.	Greater Scaup first appeared on 24 November and were last seen on 3 May. The maximum observed from the park site was 407 on 15 March 1976.
Aythya affinis	Lesser Scaup	Uncommon migrant and in winter.	One individual was observed on Upper New York Bay from the park site on 29 December, and eight were seen on 12 January 1976.
Bucephala clangula	Common Goldeneye	Common in winter; uncommon fall migrant; rare spring migrant.	Goldeneyes were observed on three dates during the winter season, with a maximum on six February 1976.
Bucephala albeola	Bufflehead	Abundant migrant and in winter; rare in summer.	This small diving duck species was observed regularly from 3 November through 12 April, with a maximum of 65 occurring in the site vicinity on 29 December 1975.
Melanitta deglandi	White-winged Scoter	Rare fall migrant and in winter.	A single individual was seen off Caven Point on 6 April 1976.
Oxyura jamaicensis	Ruddy Duck	Abundant migrant and in winter; common in summer.	Ruddy Ducks resided off Caven Point from 15 December until 29 March. The maximum was 119 on 12 January 1976.
Lophodytes cucullatus	Hooded Merganser	Uncommon migrant; rare in summer and winter.	Hooded Mergansers were observed on two dates in early February. The maximum was seven on 9 February 1976.
Mergus serrator	Red-breasted Merganser	Abundant in winter; common migrant; uncommon in summer.	Six individuals were sighted on 8 March 1976.
Circus cyaneus	Marsh Hawk	Uncommon migrant and in winter; rare in summer.	Single birds were observed hunting for prey over the Liberty State Park site in September, February, March, and April.
Pandion haliaetus	Osprey	Uncommon migrant.	One Osprey was observed along Burma Road on the park site on 22 September 1975; it was perched on a pole and feeding on a fish.
Falco sparverius	American Kestrel	Common fall migrant; uncommon spring migrant and in winter; rare in summer.	This small falcon species was observed during fall most frequently in the northern portion of the park site. A maximum of 22 was concentrated on the site on 3 October 1975.
Phasianus colchicus	Ring-necked Pheasant	Rare throughout the year.	This permanent resident was observed throughout the park site. A maximum of eight birds was flushed on 6 April 1976.
Rallus longirostris	Clapper Rail	Common migrant and in summer; uncommon in winter.	This large rail inhabited the tidal marsh on the Liberty State Park site during fall, spring, and summer.
Rallus limicola	Virginia Rail	Uncommon migrant; rare in winter.	In early June, two individuals were observed in phragmites bordering the onsite waterbody.
Fulica americana	American Coot	Common fall migrant and in winter; uncommon spring migrant and in summer.	Coots were observed during every month from October through April, with a winter maximum of 11 on 26 January and a spring maximum of nine on 12 April 1976.

Table D-3 (Contd)

Scientific Name	Common Name	Status*	Comments
Charadrius vociferus	Killdeer	Common migrant and in summer; uncommon in winter.	This common plover species was observed during each season on the study area.
Fluvialis squatarola	Black-bellied Plover	Abundant migrant; common in winter; uncommon in summer.	A maximum of 30 occurred near Caven Point on 27 October, and single individuals were seen on the Liberty State Park site on 10 November and 24 May; on the latter date, 12 were observed also near Caven Point.
Philohela minor	American Woodcock	Uncommon migrant and in summer; rare in winter.	One individual was flushed from a small stand of eastern cottonwoods on the park site in early June.
Capella gallinago	Common Snipe	Uncommon migrant; rare in winter.	Single individuals were observed along the edge of the study area's tidal marsh on 12 January, 5 April, and 3 May 1976.
Actitis macularia	Spotted Sandpiper	Common migrant; uncommon in summer.	Spotted Sandpipers were sighted along the shoreline of Upper New York Bay on the study area on 2 and 10 October, 24 May, and 6 June.
Tringa melanoleuca	Greater Yellowlegs	Abundant migrant; common in summer; uncommon in winter.	Six individuals were observed on the Liberty State Park site on 3 May, and a single bird was noted on 8 June 1976.
Erolia maritima	Purple Sandpiper	(Not listed)	On 5 April, four individuals were observed feeding on an abandoned boat hull washed with waves off Caven Point; this sandpiper species winters on rocky shores and jetties along the Atlantic coast.
Calidris minutilla	Least Sandpiper	Abundant migrant; uncommon in summer.	On 24 May 1976 from Caven Point, 25 individuals were observed.
Calidris alpina	Dunlin	Abundant fall migrant and in winter; common spring migrant.	Five individuals were sighted from Caven Point on 13 October and 75 at the same location on 5 January 1976.
Calidris pusillus	Semipalmated Sandpiper	Abundant migrant; uncommon in summer; rare in winter.	On 24 May, 15 individuals were observed feeding with the Least Sandpipers near Caven Point.
Larus marinus	Great Black-backed Gull	Abundant fall migrant and in winter; common spring migrant and in summer.	This large gull species was observed along the waterfront of the study area from September through June.
Larus argentatus	Herring Gull	Abundant throughout the year.	Like the previous species, Herring Gulls occurred regularly along the waterfront.
Larus delawarensis	Ring-billed Gull	Abundant migrant and in winter; uncommon in summer.	The species occurred regularly in the study area, with a maximum of 45 individuals being counted 22 September.
Larus atricilla	Laughing Gull	Common migrant; uncommon in summer.	Laughing Gulls were sighted in September, April, and June.
Larus philadelphia	Bonaparte's Gull	Uncommon migrant and in winter; rare in summer.	A maximum of 30 was counted along the waterfront of the study area on 2 October, and the species also was seen in April.
Sterna hirundo	Common Tern	Abundant migrant and in summer.	Two Common Terns flew over Upper New York Bay on 8 June 1976.
Sterna albifrons	Least Tern	Common migrant and in summer.	A single individual was noted on 21 June 1976.
Rynchops nigra	Black Skimmer	Common migrant and in summer.	On 13 October 1975, 15 were seen from Caven Point.
Columba livia	Rock Dove	Common throughout the year.	This semidomesticated pigeon occurred at Liberty State Park throughout the study, with a maximum of 45 being counted on 23 September 1975.
Zenaida macroura	Mourning Dove	Common throughout the year.	This dove species was present in the study area throughout the year. A large concentration of 260 birds was tallied on 22 September 1975.

Table D-3 (Contd)

Scientific Name	Common Name	Status*	Comments
Asio flammeus	Short-eared Owl	Uncommon fall migrant and in winter; rare spring migrant and in summer.	This owl species was observed hunting over the open fields on the Liberty State Park site on 17 November 1975, 12 January, and 16 February 1976.
Chaetura pelagica	Chimney Swift	Uncommon migrant; rare in summer.	Two swifts flew over the park site on 9 June 1976.
Megaceryle alcyon	Belted Kingfisher	Uncommon migrant; rare in winter.	This fish predator was observed in the study area during fall, winter, and spring, primarily near the tidal marsh.
Colaptes auratus	Common Flicker	Common migrant; uncommon in winter; rare in summer.	A single individual was observed on the Liberty State Park site on 24 September, and a pair was noted near the former Jersey City drug center on 6 April 1976.
Sayornis phoebe	Eastern Phoebe	Common fall migrant; uncommon spring migrant.	One individual was seen in the study area on 6 April 1976.
Empidonax traillii	Willow Flycatcher	Rare migrant.	One individual was singing from an eastern cottonwood stand near the onsite waterbody on 8 June and another on 10 June along Burma Road.
Iridoprocne bicolor	Tree Swallow	Abundant migrant; common in summer; rare in winter.	Three individuals were observed migrating northward on 6 April 1976.
Hirundo rustica	Barn Swallow	Abundant migrant; uncommon in summer.	Several colonies, the largest consisting of approximately 16 birds, nested in and beneath abandoned buildings that extended from shore into Upper New York Bay.
Corvus brachyrhynchos	Common Crow	Rare throughout the year.	A few Common Crows were sighted in the Liberty State Park study area in September, April, and June.
Corvus ossifragus	Fish Crow	Uncommon spring migrant; rare fall migrant and in summer and winter.	Fish Crows were observed on the park site in September and April.
Parus atricapillus	Black-capped Chickadee	Uncommon fall migrant; rare spring migrant and in winter.	A maximum of six individuals occurred in the study area in September and April.
Troglodytes aedon	House Wren	Uncommon migrant.	A single individual was seen along Wolf Road on 22 September 1975.
Mimus polyglottus	Mockingbird	Uncommon throughout the year.	A few individuals resided in the study area during all seasons.
Dumetella carolinensis	Gray Catbird	Common migrant and in summer; rare in winter.	One catbird was observed along Wolf Road on 24 September 1975.
Toxostoma rufum	Brown Thrasher	Common migrant; uncommon in summer; rare in winter.	A pair was discovered in the western portion of the park site on 10 June 1976.
Turdus migratorius	American Robin	Common migrant; uncommon in summer and winter.	One individual was observed along Burma Road on 6 April 1976.
Catharus ustulata	Swainson's Thrush	Uncommon migrant.	One individual was sighted on the park site on 10 October 1975.
Regulus calendula	Ruby-crowned Kinglet	Common migrant.	An individual was seen foraging for insects in the study area on 6 April 1976.
Lanius ludovicianus	Loggerhead Shrike	Rare migrant and in winter.	An individual was perched on a transmission line along Wolf Road on 22 September 1975.
Sturnus vulgaris	Starling	Abundant throughout the year.	Starlings were present on the Liberty State Park site throughout the period of study.
Dendroica coronata	Yellow-rumped Warbler	Abundant fall migrant; common spring migrant and in winter.	Two individuals were foraging in vegetation along Wolf Road on 10 October 1975.
Geothylypis trichas	Common Yellowthroat	Common migrant and in summer; rare in winter.	Yellowthroats, the second of the two warbler species observed on the park site, were recorded in September and June. A maximum of four was counted in the study area on a single date in those months.

Table D-3 (Contd)

Scientific Name	Common Name	Status*	Comments
Passer domesticus	House Sparrow	Common throughout the year.	This regularly occurring species in the study area reached a maximum of 23 on 22 September 1975.
Agelaius phoeniceus	Red-winged Blackbird	Abundant migrant and in summer; common in winter.	This blackbird species was a noticeable component of the bird life of the study area during fall, spring, and summer.
Icterus galbula	Northern Oriole	Uncommon migrant.	An individual was observed in a recently planted tree in the southern portion of the park site.
Quiscalus quiscula	Common Grackle	Common migrant and in summer; rare in winter.	A few grackles were observed on the Liberty State Park site in April and June.
Molothrus ater	Brown-headed Cowbird	Common migrant and in winter; uncommon in summer.	A male was noted near the Jersey City drug center on the park site on 9 June 1976.
Passerina cyanea	Indigo Bunting	Uncommon migrant.	An individual was seen near the yacht club in the study area on 8 June 1976.
Carpodacus mexicanus	House Finch	Common throughout the year.	House Finches were noted on and flying over the park site in September and June.
Spinus tristis	American Goldfinch	Common fall migrant; uncommon spring migrant and in winter; rare in summer.	Goldfinches were sighted in the Liberty State Park study area in September, January, April, and June; a maximum of 13 appeared along Wolf Road on 22 September 1975.
Papilo erythrophthalmus	Rufous-sided Towhee	Common migrant and in summer; uncommon in winter.	One was observed in a cottonwood stand near the onsite waterbody on 8 June 1976.
Passerculus sandwichensis	Savannah Sparrow	Common migrant and in winter; rare in summer.	Seven individuals occurred in one location on the park site in September, and nine were found on 6 April 1976.
Junco hyemalis	Dark-eyed Junco	Common migrant and in winter.	Juncos were present on the study area in January, and a lone individual also was observed on 6 April 1976.
Spizella arborea	Tree Sparrow	Common in winter; uncommon fall migrant.	A few small flocks were discovered in the Liberty State Park study area in January.
Spizella pusilla	Field Sparrow	Uncommon migrant and in winter.	Two were observed on the park site on 6 April 1976.
Zonotrichia albicollis	White-throated Sparrow	Abundant fall migrant; common spring migrant and in winter.	White-throated Sparrows were seen in brushy areas on the park site in January and April.
Melospiza georgiana	Swamp Sparrow	Common fall migrant; uncommon spring migrant and in winter.	This wetland inhabiting species was noted either near the tidal marsh or the onsite waterbody in September, April, and June.
Melospiza melodia	Song Sparrow	Common throughout the year.	This was the most conspicuous sparrow species on the park site throughout the year.
Plectrophenax nivalis	Snow Bunting	Uncommon in winter; rare fall migrant.	Three were noted on the Caven Point dock on 23 February, and six occurred at the same location on 1 March 1976.

*Abundant = more than 50 individuals per visit
Common = 10-50 individuals per visit
Uncommon = 1-9 individuals per visit
Rare = only a few individuals during season

Spring = principally April and May
Summer = June and July, the breeding season
Fall (early and late) = August through November
Winter = December through March

(Davis, T.H. 1976. The birds of Jamaica Bay Wildlife Refuge. Kingbird 26:11-22)

Table D-4

Annotated List of Mammal Species Observed on Liberty State Park Site, September 1975-June 1976

Scientific Name	Common Name	Comments
Sylvilagus floridanus	Eastern Cottontail Rabbit	Cottontails were observed during each of the four seasons on the Liberty State Park site.
Microtus pennsylvanicus	Meadow Vole	This grassland-inhabiting species was trapped in four of the six locations sampled in September 1975.
Ondatra zibethicus	Muskrat	Individuals were sighted near the tidal marsh and onsite waterbody in June 1976.
Rattus norvegicus	Norway Rat	Norway rats were trapped in two of the six locations examined in September 1975.
Mus musculus	House Mouse	This small mammal species was the most frequently trapped species on the park site in September 1975.

REFERENCE NO. 6

HAZARDOUS WASTE INVESTIGATION HW/EF 10-47

Inspector: Charles Elmendorf Date: 2/18/81
Alphonse Iannuzzi
Location: Summit Metals Corp.

St: Aetna St.

Town: Jersey City

County:

Lot: 19-L Block:60

Origin of Complaint: Assignment

Complaint: Possible burning of PCB's in boiler

Findings:

On 2/18/81 Alphonse Iannuzzi and Charles Elmendorf representing the Bureau of Hazardous Waste investigated Summit Metals Corp. in Jersey City. Mr. Brauer of Summit Metals was contacted. Mr. Brauer explained the operation of Summit Metals as follows: old transformers are bought from various sources, the transformers are then dismantled, the oil is put into one of three storage tanks and the copper and other metals are sold as scrap. The oil taken from transformers is used to supply a furnace on site which apparently is used only to burn the paper wrapping off the copper wiring taken from the transformers.

Two of the three storage tanks are old transformers that had the cores removed, the approximate capacities of these are 3,400 gal. and 2,500 gal. The third tank is a regular fuel oil tank with a capacity of 250 gals. Other storage on site includes five ea. 55 gal. drums full of a translucent yellow oil. These drums are labeled 'used tranx oil'. According to Mr. Brauer, these drums have been on site for at least two years, and he could not recall where they came from.

During this investigation, Tom Leonard and Robert Esposito from the Bureau of Air Pollution Control arrived on site to sample the three holding tanks. Mr. Leonard informed the writer that Summit had no air pollution permits and that analysis of samples taken from the site at an earlier date revealed high levels of Polychlorinated bi phenyls (PCB's). The two values were 23.25 ppm and 320.0 ppm. Mr. Leonard also said that there is evidence that Summit Metals has sold some oil to Finch Fuel Oil in Jersey City.

Samples taken on 2/18/81 include:

Sample #AI003A & B, a composite sample of translucent yellow oil taken from 3 of the 5 drums on site, taken by Alphonse Iannuzzi using a scott air pack.

Sample #AI004A & B, a composite sample of oil contaminated soil taken from various points on site (see accompanying sketch) by A. Iannuzzi.

Sample #20819, a grab sample taken from tank #1 by Mr. Brauer, for the Bureau of Air Pollution Control.

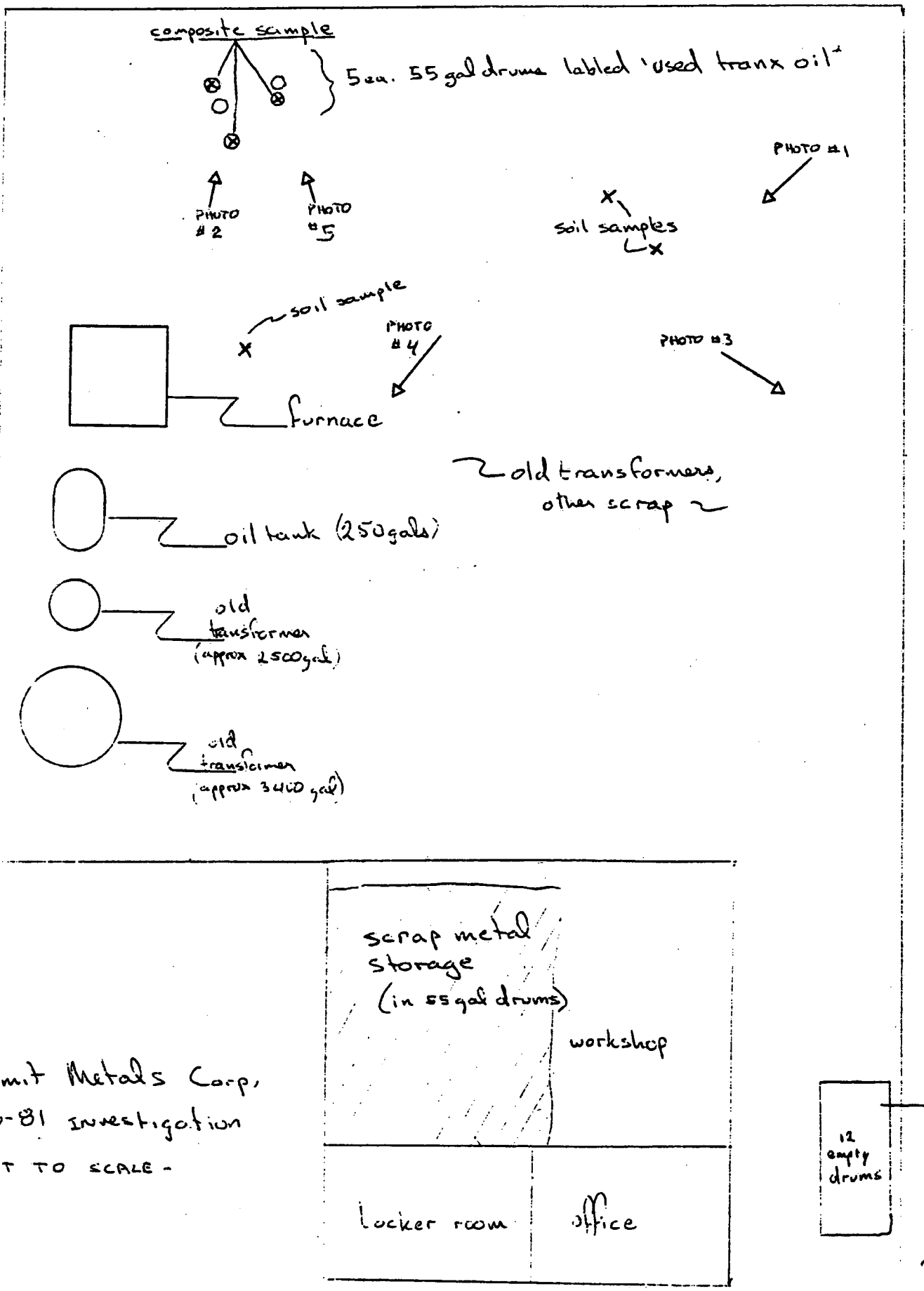
1

Sample #20825, a grab sample taken from tank #2 by Mr. Brauer, also for the Bureau of Air Pollution Control.

Sample #20821, a grab sample taken from tank #3, also by Mr. Brauer. The preceding three samples were taken in duplicate. One of each was left with Mr. Brauer. Robert Esposito assumed custody of the duplicates.

Five photographs (attached) were also taken of the site (see sketch for locations).

Besides the known dangers of burning PCB's at low temperatures, there was also a great deal of contamination on the ground from transformer oils. This could pose an immediate threat to nearby surface waters. Pending analysis of the samples taken, Summit should be ordered to cease and desist operations and further ordered to remove all contaminated dirt from the site.



summit Metals Corp,
2-18-81 Investigation
- NOT TO SCALE -

Example

CHAIN OF CUSTODY RECORD

New Jersey Department of Environmental Protection
Solid Waste Administration
32 East Hanover Street
Trenton, New Jersey 08625

Name of Unit and Address: Summit Metal Co. AETNA Ave. Jersey City NJ.

Number	Unit	Description of Samples
AI003A AI003B	Pint Pint	Translucent yellow oil.
AI004A AI004B	Pint Pint	Black oily soil.

Person Assuming Responsibility for Sample: Alphonse Iannazzi — Time: 1115 — Date: 2/13/81

Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
AI003A AI003B	Alphonse Iannazzi Alphonse Iannazzi Jr.	WAYNE HOWITZ Wayne Howitz	0945	2/13/81	HOLDING SAMPLES IN A SECURE AREA UNTIL DELIVERY TO LAB
AI004A AI004B	Alphonse Iannazzi Alphonse Iannazzi Jr.	WAYNE HOWITZ Wayne Howitz	0945	2/13/81	HOLDING SAMPLES IN A SECURE AREA UNTIL DELIVERY TO LAB

Voucher No. 4

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF HAZARDOUS WASTE

FIELD SAMPLING
DATA SHEET

DATE 2/18/81

CASE NAME Summit Metal
LOCATION AETNA Ave. Jersey City
TIME OF SAMPLING 1100 AM ____ PM
COLLECTED BY Al Iannuzzi
RECORDED BY Chuck Ehmendorf

FIELD SAMPLE NO. A AI003
B AI003

SPECIFIC SAMPLING SITE:
X DRUM # A, B, C
___ TANK TRAILER #
___ STATIONARY TANK #
___ TOP X MID ___ BOT
___ OTHER

SAMPLING CONTAINER:
X GLASS ___ PLASTIC
___ OTHER

CONTAINER VOLUME:
X PINT ___ QUART
___ OTHER ___ OZ./ ___ ML.
CONTAINER FILLED: X YES ___ NO

CHAIN OF CUSTODY INITIATED
X YES ___ NO

TYPE OF SAMPLE:
X LIQUID ___ SLUDGE
___ SOLID ___ SOIL
___ OTHER

CHARACTERISTICS OF SAMPLE:
___ TURBID ___ TRANSPARENT
COLOR translucent yellow
ODOR Not determined
OTHER

SUSPECTED SUBSTANCES(S):
PCB

ADDITIONAL INFORMATION:
Composite sample of 3 drums labeled A, B, C by DE personnel. was labeled Tran oil. photos were taken

5

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF HAZARDOUS WASTE

DATE 2/13/81

FIELD SAMPLING
DATA SHEET

CASE NAME Summit metal

LOCATION AETNA Ave. Jersey City

TIME OF SAMPLING 1115 AM ___ PM

COLLECTED BY Al Iannuzzi

RECORDED BY Chuck Elmendor

FIELD SAMPLE NO. A AI004

B AI004

SPECIFIC SAMPLING SITE:

___ DRUM #

___ TANK TRAILER #

___ STATIONARY TANK #

___ TOP ___ MID ___ BOT

X OTHER Soil Sample

SAMPLING CONTAINER:

X GLASS ___ PLASTIC

___ OTHER

CONTAINER VOLUME:

X PINT ___ QUART

___ OTHER ___ OZ./ ___ ML.

CONTAINER FILLED: X YES ___ NO

CHAIN OF CUSTODY INITIATED

X YES ___ NO

TYPE OF SAMPLE:

___ LIQUID ___ SLUDGE

___ SOLID X SOIL

___ OTHER

CHARACTERISTICS OF SAMPLE:

___ TURBID ___ TRANSPARENT

COLOR Black oily soil

ODOR

OTHER

SUSPECTED SUBSTANCES(S):

PCB

ADDITIONAL INFORMATION:

Composite sample from 3 different locations photos were taken

(6)

REFERENCE NO. 7

Building, Ninth and Cooper Streets
New Jersey 08101
609 - 541-0700 TWX: 7108910547

April 20, 1981

Bureau of Air Pollution
380 Scotch Road
West Trenton, New Jersey 08622

Attention: Henry D. Smith, Chief Chemist

Reference: Test Report No. S-1359

This report covers the analysis conducted on four (4) liquid waste samples submitted to Stablex-Reutter Inc. (SRI) on March 17, 1981. The report is organized in the following manner.

- Sample Preparation for the anlaysis of Polychlorinated Biphenyls.
- Instrumental Conditions of Analysis.
- Analytical Results.

I. Isolation of Polychlorinated Biphenyls (PCB's)

A known weight (approximately 1.0 grams) is quantitatively transferred to a 200 milliliter flask and diluted with nanograde hexanes.

Dilutions were made when necessary to bring the concentration of the PCB's within the linear range of the electron-capture detector.

II. Instrumental Conditions of Analysis

- Gas Chromatograph: Perkin-Elmer Sigma 2 equipped with a nickel 63 lined electron-capture detector; detector maintained at 350°C.

- Column: A glass column 6 foot long by 4 millimeter (internal diameter) packed with 1.5% SP-2250 plus 1.95% SP-2401 on 100/120 Supelcoport. Column temperature was maintained at 200°C throughout the analysis. Column was designed for "on-column" injection. Glass lined injector was maintained at 225°C.

- Flow Rates: 30 milliliters per minute of 5% methane in argon at 91 psig with an additional 40 milliliters per minute make-up flow through the detector.

III. Analytical Results

Sample Description	SRI Laboratory #	Polychlorinated biphenyls (PCB's)*
20798	S-1359-1	510 ug/g
20819	S-1359-2	310 ug/g
20821	S-1359-3	2200 ug/g
20825	S-1359-4	<1 ug/g

* Polychlorinated biphenyls are expressed as Arochlor 1254.

If you have any questions concerning this analysis, please don't hesitate to contact me.

Respectfully submitted,

STABLEX-REUTTER, INC.

Floyd Genicola
Senior Chemist

FG/bd

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Jack Stanton through Herbert Wortreich

FROM Ernest A. Mancini DATE April 24, 1981

SUBJECT Summit Metals
Foot of Jersey Avenue
Jersey City

In the course of routine inspections of this facility, personnel of the Hudson Regional agency noticed something of a suspicious nature and referred the matter to the Newark Field Office. This company is involved in the salvage of transformers which contain PCB's. The incinerator on the site, which predates the permit regulation, is used to burn out transformers after the fluid has been drained. Some of the oil drained from the transformers is used on site as a fuel to the incinerator and some is sold to C. Finch Oil Company in Jersey City. The following table lists the dates when samples were taken, the place in the facility from which the sample was taken and analysis of the PCB content as determined by Stablex-Roeuter, Camden:

Sample No.	Date	Source	Analysis
20798	1/21/81	Feed line to incinerator	510 ppm
20819	2/18/81	250 gal. tank (feed for incinerator)	310 ppm
20821	2/18/81	11 ft: transformer case to store oil	2200 ppm
20825	2/18/81	12 ft. transformer case to store oil	1 ppm

It is my intention to notify EPA Region 2, since the matter of handling and disposing of PCB's is under their regulations. I would like to find some legal way to shut down this incinerator but since the incinerator predates our code and since we have no idea how long this practice of PCB disposal has been going on, I cannot cite them for a violation of Subchapter 8 and then revoke their certificate.

Please adivse.

Ernest A. Mancini

EAM:sg

3

REFERENCE NO. 8

Stablex-Reutter Inc.

The Reutter Building, Ninth and Cooper Streets
Camden, New Jersey 08101
Telephone: 609 - 541-6700 TWX: 7108910547

Summit Metals

AI 003
004

May 22, 1981

Bob, 004 is the Soil Sample Composite.

NJDEP
Solid Waste Division
32 Hanover Street
Trenton, NJ 08625

Attention: Mr. Wayne Howitz, Hazardous Waste Bureau

Reference: Test Report No. SR5810

This report covers the analysis of two (2) waste samples submitted to Stablex-Reutter, Inc. (SRI) on May 1, 1981. The analysis adhered to procedures as described in the following publications.

- Standard Methods for the Examination of Water and Wastewater, 14th Edition
- USEPA Methods for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water, July, 1978

The parameters analyzed and results are delineated in the attached tables. All results are in micrograms of constituent per gram of sample. If you have any questions concerning this analysis, please don't hesitate to contact me.

Respectfully submitted,

STABLEX-REUTTER, INC.

William J Ziegler

William J. Ziegler
Laboratory Manager

WJZ/dm
Att.

PCB* Screen

Constituent	Sample and Designation SR5810-1 AI003A	SR5810-2 AI004A
PCB's, total as Arochlor 1254	<1	<1

* Polychlorinated Biphenyls

All results are in micrograms of constituent per gram of sample.

Miscellaneous Analysis

Constituent	Sample and Designation SR5810-1 AI003A	SR5810-2 AI004A
Oil & Grease, %	8.3	31

REFERENCE NO. 9

MAY 19 1981

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PCB Inspection: Summit Metals, Foot of Jersey Avenue, Jersey City, New Jersey

Arthur H. Gevirtz, Chemist
Toxic Substances Inspection Section

Stephen H. Ward, Environmental Scientist
Toxic Substances Inspection Section

Fred H. Rubel, Chief
Emergency Response & Hazardous Materials Inspection Branch

On April 15, 1981, a PCB inspection was carried out at the above-cited facility. We presented official credentials and stated the purpose of our visit to Mr. Brower, with whom we met. We presented him with a written notice of inspection and notice of confidentiality (attachment 1), explaining the contents to him. All this was carried out prior to any discussion of company activities.

At the conclusion of our inspection we reviewed with Ms. Brower all the samples and documents we were taking. We completed the receipt for samples and documents. After all samples had been drawn, Mr. Brower had to leave. He requested that Ms. Brower receive the receipt for samples.

Transformer reclaimers are a priority category targeted for PCB inspections. NJDEP notified us that Summit Metals reclaimed transformers. This facility, according to Mr. Brower, handles general scrap and dismantles electrical equipment including switches and transformers. No capcitors are accepted since they have no scrap value. At one time PCB transformers were dismantled. In recent years they have not been given to him. He did not appear to relate this to the existence of the PCB regulations and was unaware of the regulations pertaining to PCB contaminated mineral oil.

Summit Metals receives transformers from power companies, notably Con Ed and dealers. Most of the transformers come drained, containing 0.5-1 gallon residual oil. Undrained transformers are accepted.

Residual oil and undrained oil is removed and put into two transformer casings used as storage tanks. The two storage tanks, located outside, have approximately a capacity of 1200 gallons and 800 gallons. The tanks are located in an undiked area. The tanks contained approximately 600 and 100 gallons respectively (a stick was inserted into the larger unit). Samples were taken from both tanks through the top port by lowering a glass vial into the tanks. Sample #57858 from the 1200 gallon tank contained 140 ppm PCB's. Sample #57859 from the 800 gallon tank contained 2400 ppm PCB's. Neither tank was marked with any PCB mark. Neither are records kept of individual additions to the tank. The facility, which operates 8 hours per day, had no SPCC plan.

2-SF-ERHMIB:AHGevirtz:mg:bldg.209:x6667:4/29/81 & 5/19/81

ATTACHMENT F

CONCURRENCES

SYMBOL	SF-ERHMIB	SF-ERHMIB	SF-ERHMIB	SF-ERHMIB				
SURNAME	GEVIRTZ	WARD	KRAFT DK	RUBEL (P)				
DATE	May 5/20/81		5-26-81	5/28/81				

EPA Form 1320-1 (12-70)

OFFICIAL FILE COPY

(1)

Each month approximately 200 transformers of varying size are dismantled, generating about 2000 gallons of oil. A small amount is used to operate the facility incinerator, the rest is sold to Finch Fuel Oil, Kearny, New Jersey. The incinerator which is used to burn off the paper from the copper coils has no scrubber and relies only on an afterburner for pollution control. Mr. Brower did not know the operating temperature of the incinerator.

After oil is removed from the transformers the winding are removed and the copper or aluminum sold to dealers. Casings are shipped to Feldman Sons, East Orange, New Jersey and Schaviono and Bononono, Jersey City, New Jersey.

The work area storing the transformers was located outside. Heavy rains on April 14, 1981 had left oil surfaced standing puddles. The area adjacent to the incinerator and storage tanks was heavily oil laden. Samples of an oil containing puddle and soil were taken from this area (sample #57861 and #57860) and were found to contain 450 ppm and 1270 ppm respectively.

About 30 transformer nameplates were checked in three areas. None were identified as PCB.

Mr. Brower was informed at length of the need to check oil reclaimed from transformers for possible PCB contamination before disposal and of the special disposal requirements for PCB contaminated oils. He was also given a copy of the PCB regulations. In addition, on May 15, 1981, Mr. Brower was informed of the results of the analysis and the need to bring his facility into compliance with the PCB regulations.

ATTACHMENTS:

1. Notices of Inspection and Confidentiality, and Receipt for Samples.

EPA United States Environmental Protection Agency

NOTICE OF INSPECTION

Name of Firm: Summit Metals Co Inc	
Firm Address: FFUT J. Jersey Ave Jersey City N.J	
Inspector Name and Address: Arthur H. Gevirtz USEPA, Edison, N.J. 08817 (201-321-6667)	Date: 4/15/81 Time:
Inspector's Signature: Arthur Gevirtz	Name and Title of Recipient: JULIUS BRAUER Mgr.
Title: Chemist	Signature of Recipient:

REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act

☑ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been compiled with.

☐ In addition, this inspection extends to (circle appropriate letters):

(A) Financial data
(B) Sales data
(C) Pricing data
(D) Personnel data
(E) Reserach data

The nature and extent of inspection of such data specified in A through E above as follows:

3

REFERENCE NO. 10

Inspector: Alphonse Iannuzzi, Jr. AIJr. Date: 11/4/82

Location: Summit Metals Corp.

St: Foot of Jersey Ave. Property owner: John Cavallone
Foot of Jersey Ave.
Jersey City

Town: Jersey City

County: Hudson

Lot: ~~19-L~~ 19.WM Block 60

Origin of Complaint: Follow-up investigation of 7/12/82 inspection.

Complaint: Determine status of disposal or PCB waste.

965T

Findings:

On Tuesday, 11/4/82, a follow-up investigation was performed at Summit Metals Corp. (SMC) at the above address. Julius Brauer, manager, was contacted on site and supplied all information.

Mr. Brauer stated that SMC has not had the drums of waste PCB fluid disposed yet. He said that both Rollins Environmental Services (address not known, may be in Texas), and CECOS International, Staten Island, NY, obtained samples of the PCB fluid. A date for sampling was not obtained, however, Mr. Brauer indicated that it was recently. He stated that all of the drums containing PCB's were emptied into a storage tank (approx. 700 gal. capacity) and this tank was sampled by these companies. Mr. Brauer has not received any information back from either of these companies as of this inspection date.

Facility inspection

The facility was inspected with Mr. Brauer. The following tanks are on site:

1. Approx. 1,000 gal. grey transformer shell,
2. Approx. 700 gal. black metal tank, and
3. Two approx. 250 gallon furnace feed tanks.

Mr. Brauer said that the PCB oil was transferred into the approx. 700 gallon balck metal tank from the approx. 10 drums that were on site during my 7/12/82 DWM investigation.

Both the 1,000 gal. transformer shell and the 700 gallon tank had yellow and black labels on them indicating that PCB's were stored in them. Mr. Brauer climbed up onto the 700 gallon tank and measured the level in the tank by dipping a pole into the top of the tank and measuring the liquid level on the pole with a tape measure. The PCB fluid level was 26". The tank was also measured, the height was 72", and the tank diameter was 54". Using these measurements, it was determined through calculations that the tank was about 1/3 full and contained about 250 gallons of PCB fluid.

Mr. Brauer had stated during a 10/13/82 telephone conversation that there were approx. 250 gallons of PCB transformer fluid stored at his site and it was determined that this fluid was stored in approx. 10 drums (not all were full) during the 7/12/82 investigation. Therefore, it appears that the quantity of the drums were emptied into the 700 gal. storage tank.

Attachment B 1

During the 7/12/82 DWM investigation, Mr. Brauer had stated that the only PCB fluid storage was in about 10 drums. During this investigation, he said that there is some fluid presently stored in the 1,000 gal. grey transformer shell. The height of the liquid in this shell was measured by Mr. Brauer by dipping a pole through the top opening. The liquid level on the pole was 5". Mr. Brauer stated that this fluid contained 140 ppm PCB's based on the USEPA's original analysis sampled by Dr. Gevirtz of EPA Edison, NJ (Region II). According to this statement, it appears that the contents of this tank was never emptied into the drums for storage. This is contrary to Mr. Brauer's claims during the 7/12/82 DWM investigation.

Mr. Brauer said that there were no more containers of fluid on site other than what was in the two tanks. He was specifically asked if the 250 gallon furnace feed tank and white drum next to this tank contained any material. He stated that they were both empty. I then checked them and found that the drum was about 1/2 full and the 250 gal. tank was full with a thin yellow oily liquid. The white drum was labeled with the words "Advanced coatings", "flammable". Mr. Brauer could not explain why these containers had this material in them and where this material came from.

During the 7/12/82 DWM investigation, Mr. Brauer had said that about 10 drums of fluid were on site. Five of these 55 gal. metal drums were viewed by me and the others could not be seen due to being behind large sheets of scrap metal inside of the warehouse. These sheets of metal were still lying where the drums of PCB fluid were supposed to be stored on 7/12/82. Mr. Brauer stated that the drums once behind this metal were emptied into the 700 gal. storage tank and refused to move the metal sheets, therefore, I moved them. Four black metal 35 gal. drums containing a thin yellow oily liquid were noted stacked on top of open top drums containing metal scraps. Mr. Brauer checked each drum and stated that three were about 3/4 full and one only contained a small amount of liquid. Mr. Brauer stated that he thought that these drums were emptied into the storage tank and he didn't know that they were there. He also made comments about not being able to keep track of his workers. No other containers on site were determined to have fluid in them. However, there were several hundred open top drums containing scrap metal inside the warehouse which could not be checked due to stacking (drums were close together and stacked 4 to 5 drums high in some areas).

The following are additional observations made during the facility inspection:

1. Eight open top drums containing furnace clean out material (ash) were noted next to the open front metal box next to the furnace. Mr. Brauer did not know how SMC was going to dispose of this material.

2. There were no indications of additional transformers being taken onto the site (i.e., empty transformer shells) except for the increased quantity of fluid. There were several piles of scrap metal (some empty drums, metal parts, etc) in the lot and a flat bed truck carrying scrap metal was being emptied during the inspection.

3. Transformer shells were noted on the property next to SMC operated by Jersey Power Equipment. There was no one on this site during my SMC investigation.

4. Another 250 gallon furnace feed tank was noted behind the furnace, this tank was empty (checked by hitting it on the side). There were plastic hoses noted in this area. Mr. Brauer stated that these hoses were used to pump out

2

the fluid from the transformers when he used to receive them. He said that he has not been using the furnace. I could not determine if this was an accurate statement, however, the furnace did not appear to have been used that day.

5. The soil on site still remains saturated with oil.

Samples/photos

Two samples were taken during the investigation and are as follows:

1. #AI180A, a composite sample of liquid in the white 55 gal. drum (DEP label #1012) and the 250 gal. furnace feed tank (DEP label #1013).

2. #AI181A, a composite sample of the three 3/4 full 35 gal. drums inside the warehouse (DEP label #'s 1014, 1015 and 1016).

— Six photographs of the various containers sampled and the facility were taken.

Additional comments

Prior to leaving the site, Mr. Brauer was told not to move or transfer any of the containers of fluid that were on site until they are ready to be moved for disposal.

A rough estimate of about 665 gallons was made for the approx. quantity of PCB fluid and potentially PCB fluid on site (analysis will indicate if additional oily liquid is a PCB fluid). This estimate includes the contents of the three 35 gal. drums, one 55 gal. white drum, one 250 gal. boiler feed tank, the 700 gal. PCB storage tank and the 1,000 gal. transformer shell.

cc: Barbara Strollo

Reviewed 12/21/82, SC

REFERENCE NO. 11

DIVISION OF WASTE MANAGEMENT
BUREAU OF FIELD OPERATIONS

HW/EF # 10-47

INVESTIGATIVE REPORT

Inspector: Alphonse Iannuzzi, Jr. AIJr. Date: 3/14/83 Time In: 0900 hrs DWM Incident Report #: N/A
Time Out: 1130 hrs

Company Name: Summit Metals Corportation Telephone: (201) 434-3449
EPA ID # N/A Property Owner:
Street: Foot of Jersey Avenue Address:
Town: Jersey City
County: Hudson
Lot: 19-L Block: 60
Type Ownership:

Complaint:

Origin of Complaint: Follow up of 2/7/83 order issued to S.M.C. from D.W.M and my 11/4/82 investigation.

Samples taken? ☐ YES ☒ NO

Photos taken? ☒ YES ☐ NO Eight photos of the facility and poor housekeeping practices were taken.

Findings:

On Monday 3/14/83 a compliance inspection of the 2/7/83 D.W.M. order to Summit Metals Corp. (S.M.C.) was performed. Julius Brauer, Manager was contacted and supplied all information.

Processes

S.M.C. is presently bringing scrap metal back to its facility for segregation. Mr. Brauer stated that S.M.C. has no contracts with utility companies to receive transformers, however, they do accept some transformers and electrical motors. These devices are heated in S.M.C.'s furnace and the copper field is removed for its scrap value. Mr. Brauer said that residual oil from the transformer's were put into a drum and burned in salamander oil burners over the winter. S.M.C. does not have any drums of this residual transformer oil on site (this does not include the drums on site during my 11/4/82 investigation).

S.M.C. transports transformers for G & S Motor Equipment, Harrison Avenue, Kearny, N.J. G & S has contracts with utility company's to remove their old transformers. Mr. Brauer did not want to discuss which companies G & S has contracts with.

Findings and Summary:

Facility Inspection

The following observations were noted during the facility inspection:

1. The furnace was smoking heavily during the inspection. There were motor fields in the furnace being heated by wood. It did not appear that S.M.C. was burning oil to heat the furnace.

2. There was a flat bed trailer containing empty transformers on site (approx. 20). This trailer belongs to G & S. These transformers were picked up for G & S and brought back to S.M.C.'s facility because it was too late to deliver them to G & S last night. Some of these transformers were taken off the trailer because it had a flat rear tire. This load was picked up from Long Island Lighting Co. Mr. Brauer stated that S.M.C. also buy's scrap metal from G & S.

3. Oily soil was noted in various areas throughout the facility.

4. The following containers had transformer oil in them:

   a. White 55 gal. metal drum, D.W.M. label #1012, about 1/2 full.

   b. A full 250 gal. tank near the furnace (D.W.M. label fell off).

   c. Four black metal 55 gal. drums inside the warehouse. These drums were not physically checked, but when pushed they did contain material.

   d. A black 700 gal. tank containing 21" of PCB fluid. This fluid level was 5" lower then when measured on 11/4/82.

   e. A 1,000 gal. transformer shell containing 11" of PCB fluid. This was an increase of 6" since when it was measured last on 11/4/82. Mr. Brauer measured the fluid in the tanks by placing a pole in each tank and measuring the oil level on the pole.

5. The yard contained various scrap metal.

Findings and Summary:

6. Approximately eight drums of open top furnace clean out ash were noted next to the open front metal box. Mr. Brauer stated that this is copper bearing ash and he will sell it when copper prices go up.

Order Compliance

Mr. Brauer stated that his lawer, Micheal Fishman, contacted someone from D.E.P. about the S.M.C. order. He said that he contacted AETC, Mt. Olive, N.J. for the disposal of the PCB's on his property. He said that AETC had visited S.M.C. on Friday 3/11/83.

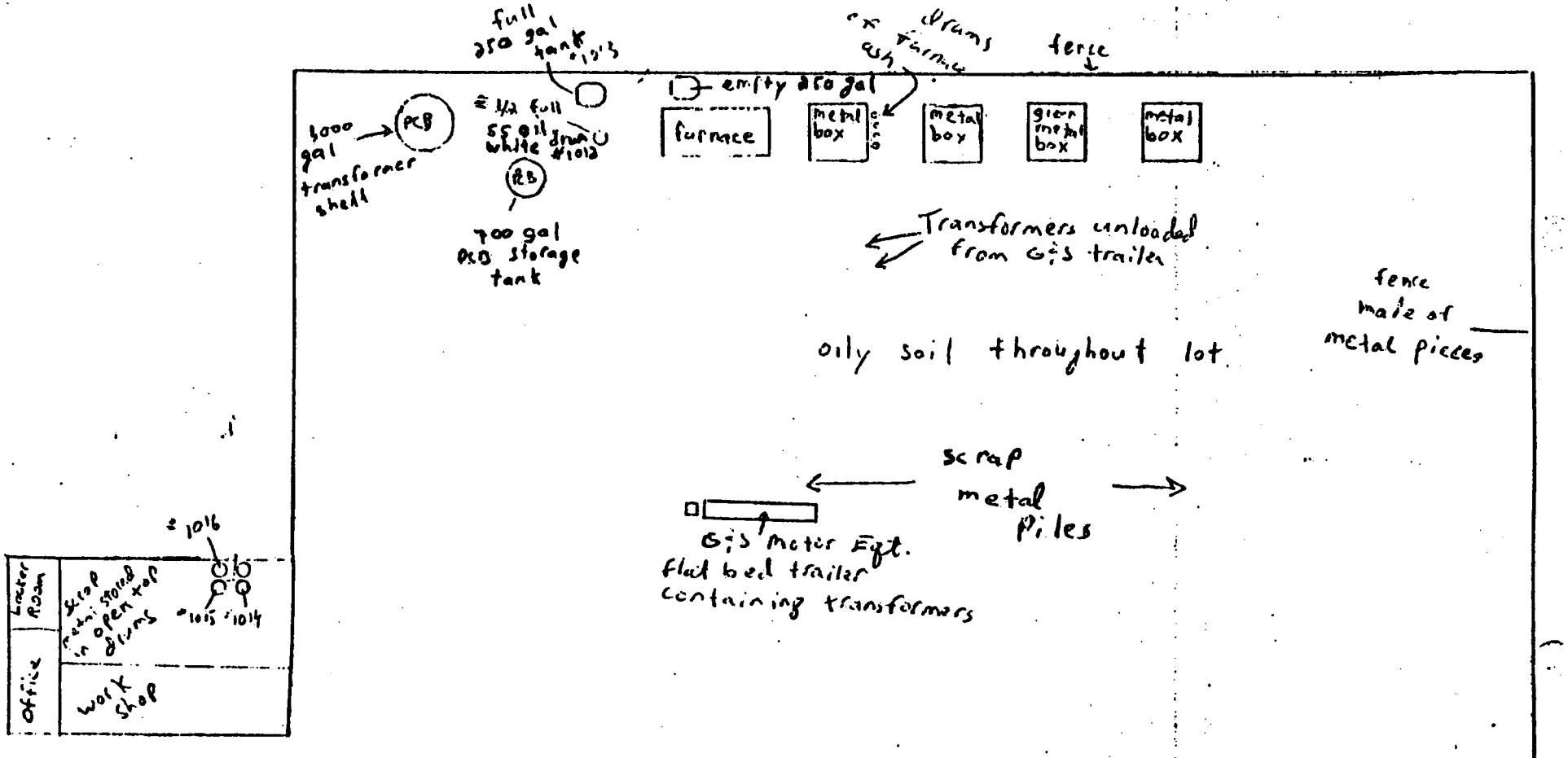
S.M.C. did not comply with any point or sub-heading of the two points in the 2/7/83 order. I went over each point of the order with Mr. Brauer and explained what S.M.C. had to do to comply with it.

Additional Information

I discussed the transporter permit that S.M.C. had obtained from N.Y.D.E.C., dated 1/27/83, with Mr. Brauer. The D.W.M. became aware of this permit by N.Y.D.E.C. The permit states that S.M.C. will transport dielectric fluid with less than 50 ppm to Solor Chemical Co., Bloomfield, N.J. Mr. Brauer stated S.M.C. obtained this permit because they intended to transport transformer fluid from consolidated Edison 20th Avenue and 21st. street, Astoria, N.Y. to Solar Chemical,. S.M.C. had intended to transport the oil in a tank trailer which they were going to buy. However, S.M.C. never got the contract to do this.

cc: Barbara Strollo
G & S Motor Equipment Co. file (HW/EF 10-43)
BAPC - Newark Field Office

Summit Metals Corp.
Jersey City, 3/14/83
A. Iannuzzi, Jr.
-Not to scale-



Jersey State Power Equipment
Facilit

REFERENCE NO. 12

SWSF 02194

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT
120 Rt. 156, Yardville, N.J. 08620

JACK STANTON
DIRECTOR

LINO F PEREIRA
DEPUTY DIRECTOR

February 7, 1983

Summit Metals Corporation
Mr. Julius Brauer
Foot of Jersey Avenue
Jersey City, NJ 07302

RE: Penalty Settlement Offer

Dear Mr. Brauer:

Attached is an Administrative Order concerning a violation of the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. and regulations promulgated thereunder, specifically N.J.A.C. 7:26-2.2(a)(b).

Pursuant to the terms of the Administrative Order, the violations must be corrected and the rules and regulations of this Department must be complied with by the specified date.

In addition, a penalty settlement offer of $10,000 will be held open until March 7, 1983 to allow for an amicable resolution of this statutory claim for the referenced violation. Be advised that N.J.S.A. 13:1E-9c provides for a maximum civil penalty of $25,000 per day for violations of this nature.

In the event of non-compliance with the Administrative Order and/or non-acceptance of this Penalty Settlement Offer, this matter will be referred to the Office of the Attorney General for the initiation of litigation to enforce the Order and seek the full penalties allowed by law.

Should you wish to discuss the specifics for acceptable compliance with these directives, contact Ms. Barbara Strollo at (609) 984-3695.

Very truly yours,

Joseph A. Rogalski
Assistant Director

BS:kas

SW|SF02194

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
120 Rt. 156, Yardville, N.J. 08620

JACK STANTON
DIRECTOR

LINO F PEREIRA
DEPUTY DIRECTOR

IN THE MATTER OF
SUMMIT METALS CORPORATION

ORDER AND
NOTICE OF VIOLATION

This Order and Notice of Violation is issued pursuant to the Solid Waste Management Act et seq. N.J.S.A. 13:1E-1 et seq. and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq.

FINDINGS

1. Summit Metals Corporation is located at Aetna Street, Lot 19-1, Block 60 in Jersey City, Hudson County, New Jersey.

2. On February 18, 1981, the Department's inspector observed three (3) storage tanks (one 3,400 gallons, one 2,500 gallons and one 250 gallons) and five (5) fifty-five gallon drums at the site occupied by Summit Metals Corporation.

3. During the inspection conducted on February 18, 1981, the Department's inspector took samples of the waste from the containers at the site. Based upon the analysis of these samples the Department has determined that the waste is classified as hazardous substance.

4. On July 12, 1982, the Department's inspector observed five (5) drums stored at the site identified in paragraph 1.

5. The inspection conducted on February 18, 1981 and July 12, 1982, disclosed that the soil at this property was observed to be contaminated with hazardous substances, including petroleum products and polychlorinated biphenyls.

6. On November 4, 1982, the Department's inspector observed five (5) drums (four 35 gallons and one 55 gallons), one (1) 250 gallon storage tanks, one (1) 1,000 gallons transformer shell and one (1) 700 gallon storage tank on the site identified in paragraph 1.

7. During the inspection conducted on November 4, 1982, the Department's inspector took two composite samples. One of the samples included the 55 gallon drum and the 250 gallon tank. The other sample consisted of three of the thirty five (35) gallon drums, all which were identified in paragraph 6. Based upon the analysis of these samples the Department has determined that the material is classified as hazardous substances.

8. The disposal and/or storage of these containers in this manner violates the Spill Compensation and Control Act, as amended N.J.S.A. 58:10-23.11 et seq., the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq., and the regulations promulgated pursuant to the Solid Waste Management Act, specifically N.J.S.C. 7:26-2.2(a) and N.J.A.C. 7:26-2.2(b).

ORDER

It is HEREBY ORDERED AND DIRECTED that Summit Metals Corporation, its principals, officers, agents, employees, successors, assigns, receivers, and any trustee shall:

1. Within 14 days of receipt of this Order, submit the following information to the Division of Waste Management, Bureau of Field Operations, 1259 Route 46, Parsippany, New Jersey 07054.

   a. Total number of containers, volumes and contents of containers on site;

   b. Identification of any waste (hazardous or non-hazardous) materials on site;

   c. Identification of any waste which has leaked or spilled from drums or other containers;

2. Within 30 days of receipt of this Order:

   a. Remove and properly dispose of all contaminated soil and all hazardous substances which have leaked or spilled from drums or containers stored on site.

b. Properly label all containers and complete the appropriate hazardous waste manifests pursuant to N.J.A.C. 7:26-7.1 et seq.

c. Dispose of all solid and hazardous waste from the property to an authorized waste facility.

3. Dispose of all waste (hazardous or non-hazardous) materials utilizing a properly registered collector/hauler pursuant to N.J.A.C. 7:26-7.1 et seq. and 7:26-3.1 et seq.

4. Notify the Bureau of Field Operations (201) 648-3669 at least 3 days before any specific shipments of hazardous waste are scheduled to leave the site.

5. Notify the Bureau of Field Operations at least 10 days before commencement of clean-up activities at the site.

NOTICE OF LIABILITY AND PENALTIES

The Spill Compensation and Control Act, N.J.S.A. 58:10-23 et seq., and the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., each provide for civil penalties of up to $25,000 per day for violations of the Acts and regulations promulgated therein.

If the company fails to comply with this Order, the Department may perform the clean-up and removal operations specified herein. If the Department performs the clean-up, the company shall be strictly liable for the cost of clean-up and may be liable for three times the amount of the Department's costs. In addition, a first priority lien will be placed upon the company's revenues and all of the company's real and personal property.

Joseph A. Rogalski
Assistant Director

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REFERENCE NO. 13

ADVANCED ENVIRONMENTAL
TECHNOLOGY CORPORATION

June 17, 1983

Department of Environmental Protection
Division of Waste Management
1259 Route 46
Parsippany, NJ 07054

ATTENTION: Mr. A. Iannuzzi

Dear Mr. Iannuzzi:

The following is information, requested by yourself, pertaining to Summit Metal Company, Foot of Jersey Avenue, Jersey City, NJ.

On Thursday, June 16, 1983 AETC shipped to American Electric Corporation, Jacksonville, FL the following items:

(5) 55-gallon drums Waste PCB Transformer oil (84,000 ppm - see analysis attached)

(1) empty PCB contaminated cylindrical tank (5' x 6') greater than 500 ppm

(2) 55-gallon drums Waste PCB oil less than 500 ppm (201 ppm exactly - see analysis)

(3) 30-gallon drums Waste PCB oil less than 500 ppm (201 ppm exactly - see analysis)

Items were shipped on NJ Manifest #0117807. For your information, the 5 drums of PCB oils less than 500 ppm were the ones in the back room, that you labeled for removal. The 5 drums of 84,000 ppm were drained from the cylindrical tank and shipped. The empty tank was sent as PCB contaminated article, greater than 500 ppm.

ATTACHMENT K

1

As per your request, please find enclosed copies of:

NJ Hazardous Waste Manifest
Two (2) copies of Analysis
Updated copies of American Electric
Corporation Transporter Permits
and operating permit

AETC also plans in the near future to drain 750 gallon transformer on site at Summit Metal. AETC will inform you at least three (3) days prior to any such activity.

Thanks for your attention to this matter.

Sincerely,

ADVANCED ENVIRONMENTAL
TECHNOLOGY CORPORATION

George Hengst

George Hengst
Technical Sales Coordinator

GH/pw
Enclosures

rm YHW-001 (10/80)

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

HAZARDOUS WASTE MANIFEST

Please TYPE all information.

PART A: SEND TO DISPOSER'S STATE MR. BRAUER DOCUMENT NO. NJ 0117807

GENERATOR NAME: SUMMIT STEEL CO. INC. PHONE (INCLUDE AREA CODE) 201-434-3449 EPA ID NO. NOT REQUIR[ED]

ADDRESS (STREET - CITY - STATE - ZIP CODE): FOOT OF JERSEY AVE. JERSEY CITY NJ

TRANSPORTER NO. 1: AMERICAN ELECTRIC CORP. PHONE (INCLUDE AREA CODE) 904-786-112[6] EPA ID NO. FLD061[...]

ADDRESS (STREET - CITY - STATE - ZIP CODE): 523 SOUTH ELLIS RD JACKSONVILLE, FLA 32[...]

TRANSPORTER NO. 2: PHONE (INCLUDE AREA CODE) EPA ID NO.

ADDRESS (STREET - CITY - STATE - ZIP CODE)

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY: AMERICAN ELECTRIC CORP. PHONE (INCLUDE AREA CODE) 904-786-1126 EPA ID NO. FLD061[...]

SITE ADDRESS (STREET - CITY - STATE - ZIP CODE): 523 SOUTH ELLIS ROAD, JACKSONVILLE, FL[A] 3[...]

IF MORE THAN TWO TRANSPORTERS ARE TO BE UTILIZED, FILL OUT THE FOLLOWING AS APPROPRIATE
THIS FORM IS NO. ___ OF A TOTAL OF ___ THE FIRST MANIFEST DOCUMENT NO. IS NJ→

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS NO.	CONTAINERS TYPE	EPA CODE	WASTE
WASTE POLYCHLORINATED BIPHENYLS	ORM-E	UN 2315	1	00250	1	005	01		X3[...]
WASTE POLYCHLORINATED BIPHENYLS	ORM-E	UN 2315	2	01200	3	001	07		X3[...]
WASTE POLYCHLORINATED BIPHENYL-CONTAMINATED TRANSFORMER OIL < 500 PPM	ORM-E	UN 2315	1	00100	1	002	07		X3[...]
WASTE POLYCHLORINATED BIPHENYL-CONTAMINATED TRANSFORMER OIL < 500 PPM	ORM-E	UN 2315	1	00090	1	003	01		X3

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED) SHIPMENT OF A NONHAZARDOUS NATURE WHICH DO NOT HAVE TO BE MANIFESTED)

AX-0180 ... 01 CONTAINS PCB OIL 10,000 PPM OR 99.02 AROCHLOR 1260
07 - 5' X 6' CYLINDER TANK - EMPTY > 500 PPM POLYCHLORINATED BIPHENYL

GENERATOR'S CERTIFICATION: This is to certify that the above named material are properly classified, described, packaged, marked and labeled and in proper condition for transportation according to the applicable regulations of the Department of Transportation, U.S. EPA and the State. The ... were consigned to the Transporter named. The Treatment, Storage or Disposal Facility can and will accept the shipment of hazardous waste and ... permit to do so. I certify that the foregoing is true and correct to the best of my knowledge.

T-X387

GENERATOR'S SIGNATURE - ALSO PRINT SIGNATURE: [signature] S.L. BRAUER TITLE

DATE SHIPPED: 06 16 83 (MO. DAY YR.) EXPECTED ARRIVAL DATE: 06 18 8[3]

TRANSPORTER NO. 1 SIGNATURE AND CERTIFICATION OF RECEIPT OF SHIPMENT - ALSO PRINT SIGNATURE: [signature] J.D. SOLA...

TRANSPORTER NO. 1 SWA REGISTRATION NO. NJSWA5894LAB DATE RECEIVED 06 16 [...]

TEAR AT THIS PERFORATION

3

PART B: SEND TO DISPOSER'S STATE SUMMIT METAL CO. INC. GENERATOR EPA ID NO. NONE REQUIRED

TRANSPORTER NO. 1 SIGNATURE AND CERTIFICATION OF DELIVERY AND NON-TAMPERING WITH SHIPMENT - ALSO PRINT SIGNATURE DATE

TECHNION INC.

681 MAIN STREET
BELLEVILLE, NEW JERSEY 07109
201 – 759-0228

ANALYTICAL REPORT

DATE May 26, 1982

CLIENT SUMMIT METAL COMPANY

TECHNION REF. NO. 2849

CLIENT REF. NO. 05/10/82

MATERIAL: ONE SAMPLE OF OIL.

ANALYSIS REQUESTED: P.C.B. CONTENT.

The above sample was delivered and analyzed as requested.

CERTIFICATE OF ANALYSIS

TEST RESULTS:

Sample date	PCB Content
5/10/82	84,800 ppm or 8.48 % PCB (Araclor 1260)

Submitted respectfully,

Susan Baturay
Laboratory Director

SB/ss:cc

5 x 55 gal drums

+ 1 EMPTY TANK > 500 ppm

(4)

TECHNION INC.

681 MAIN STREET
BELLEVILLE, NEW JERSEY 07109
201 - 759-0228

ANALYTICAL REPORT

CLIENT Summit Metal Co. Inc. DATE March 15, 1983

CLIENT REF. NO. 031483 TECHNION REF. NO. 3522

MATERIAL: One (1) oil sample labeled 3/14/83.

ANALYSIS REQUESTED: PCB Content.

The above sample was received and analyzed as requested.

CERTIFICATE OF ANALYSIS

TEST RESULTS:

Oil Sample . . . . . 201 ppm

Test results are designated in parts per million. (ppm)

Submitted Respectfully,

Susan Baturay
Laboratory Director

SB/cp

3 x 30 gal drums
2 x 55 gal drums

5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SEP 23 1982

Mr. Edward M. Brashier, E.P.
American Electric Corporation
523 South Ellis Road
Jacksonville, Florida 32205

Dear Mr. Brashier:

On August 25, 1982, you wrote to David Wagner inquiring about the status of four petitions for exemption from the ban on manufacturing, processing, and distributing in commerce polychlorinated biphenyls (PCBs). The Environmental Protection Agency (EPA) has received renewed petitions for exemption from American Electric Corporation (AEC) and Eastern Electric Corporation (EEC). These companies are permitted to continue the activities for which they request exemption until EPA rules on their petitions, provided that such activities were underway before July 1, 1979.

American Environmental Protection Corporation's (AEPC) newly filed petition for exemption is different than the petitions of AEC and EEC, since the activities for which AEPC requests exemption were not underway before July 1, 1979. Thus, AEPC is not permitted to engage in any activities for which it requests exemption until EPA actually rules on the petition. EPA expects to begin consolidated rulemaking on all new and renewed petitions for exemption this fall.

If you have any questions concerning this letter, please feel free to contact Robert Friedrich of my staff at (202) 382-3976.

Sincerely yours,

Richard J. Guimond, Chief
Chemical Regulation Branch

6

S/C 821

STATE OF GEORGIA
OVERSIZE OR OVERWEIGHT PERMIT

T-34 F 208

THE ISSUANCE OF THIS PERMIT AUTHORIZES THE MOVEMENT OF THE VEHICLE OR LOAD BELOW PURSUANT TO AUTH
CONTAINED IN THE GEORGIA CODE OF PUBLIC TRANSPORTATION

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA
OVERSIZE OR OVERWEIGHT PERMIT

T-32 Per F 20

THE ISSUANCE OF THIS PERMIT AUTHORIZES THE MOVEMENT OF THE VEHICLE OR LOAD BELOW PURSUANT TO AU
CONTAINED IN THE GEORGIA CODE OF PUBLIC TRANSPORTATION, CHAPTER 95A-9 AS AMENDED AND
BY THE STATE TRANSPORTATION BOARD

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
OVERSIZE OR OVERWEIGHT PERMIT

T-28 F 208E

THE ISSUANCE OF THIS PERMIT AUTHORIZES THE MOVEMENT OF THE VEHICLE OR LOAD BELOW PURSUANT TO AUTHO
CONTAINED IN THE GEORGIA CODE OF PUBLIC TRANSPORTATION CHAPTER 95A-9 AS AMENDED

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA
OVERSIZE OR OVERWEIGHT PERMIT

T-24 Permit F 208E

THE ISSUANCE OF THIS PERMIT AUTHORIZES THE MOVEMENT OF THE VEHICLE OR LOAD BELOW PURSUANT TO AUTH
CONTAINED IN THE GEORGIA CODE OF PUBLIC TRANSPORTATION, CHAPTER 95A-9, AS AMENDED AND REGULATIONS SET F
BY THE STATE TRANSPORTATION BOARD

32-6

PHOTO COPY OF THIS PERMIT IS NOT VALID

Company AMERICAN ELECTRIC CORPORATION Address JACKSONVILLE State FLA

Load POLYCHLORINATED BIPHENYL Effective Dates of Permit 04/05 19 83 To 04/04 19

Tractor INTERCHANGEABLE Lic No _____ State _____ Trailer Lic No _____ State _____

Maximum Dimensions Width LEGAL Ft _____ In Height LEGAL Ft _____ In Length LEGAL Ft _____ In _____

Maximum Weight Total Gross LEGAL Lbs Per Axle (1) _____ (2) _____ (3) _____ (4) _____ (5) _____ (6) _____

Authorized Route Over Georgia State and Federal Highways NOTE: MUST CALL (404) 294-6027 UPON BEGINNING ANY MOVEM

WITHIN THE STATE, OR UPON ENTERING THE STATE, AND CALL UPON COMPLETION OF A

Detour Low Clearance At MOVEMENT WITHIN THE STATE, OR UPON LEAVING THE STATE.

Origin _____ Destination _____ Escort Front _____ Rear _____

Sent To Location SAME City _____ State _____ By C.

Fee $ 100.00 Charge To _____ Money Order No _____ Cash _____ By Check No 3750

Processed BW Approved 04/05 19 83 By [signature] - CHIEF

OFFICE OF PERMITS & ENFORCE

This permit is not valid on roads other than Interstates or State numbered highways, except when making a pick or delivery on such road.

Any person submitting an application for a "Hazardous Materia permit shall include, as an attachment to the application, an Emergency Actio Plan which shall include as a minimum; the phone number and name of the perso and alternate in their organization who is the primary point of contact for information or action with regard to any movement or emergency situation; an estimate of the number of trips and the types and quantities of hazardous materials to be transported per trip on the permit issued; general informatio as to the origins, destinations, and route which would be preferred for trave

(7)

REFERENCE NO. 14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

SEP 6 1984

Paul Kahn, Esq.
Office of Regulatory Services
New Jersey Department of
Environmental Protection
CN 402
Trenton, New Jersey 08625

Re: In Re Summit Metals Company, Inc.
Docket No. II TSCA-PCB-81-0120

Dear Paul:

Please find enclosed a copy of the Consent Agreement and Final Order executed by the Regional Administrator to conclude the above-referenced matter. The Order concludes this matter, hence nothing further is planned.

Please call if you have any questions.

Sincerely yours,

Gregory T. Halbert

Gregory T. Halbert
Assistant Regional Counsel
Waste and Toxic Substances Branch
Office of Regional Counsel

Enclosure

RECEIVED
SEP 10 1984
REGULATORY SERVICES
ENVIRONMENTAL PROTECTION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

In the Matter of	:	CONSENT AGREEMENT AND FINAL ORDER
SUMMIT METALS COMPANY, INC.,	:	Docket No. II TSCA-PCB-81-0120
Respondent,	:	
Proceeding Under Section 16 of the Toxic Substances Control Act	:	

PRELIMINARY STATEMENT

This Civil proceeding for the assessment of a penalty was initiated pursuant to Section 16(a) of the Toxic Substances Control Act ("TSCA"), 15 U.S.C. § 2616(a). The Complainant in this proceeding, the Director of the Enforcement Division, Region II of the United States Environmental Protection Agency ("EPA"), issued a Complaint and Notice of Opportunity for Hearing to Respondent, Summit Metals Company, Inc., on June 11, 1981. Said Complaint charged Respondent with violations of Regulations, 40 CFR Part 761, which were promulgated pursuant to Section 6(e)(1) of TSCA.

This Consent Agreement and Final Order of the Regional Administrator are in full settlement of all liabilities which might have attached as a result of this proceeding. Respondent neither admits nor denies the jurisdictional allegations of the

2

Complaint, neither admits nor denies the facts hereinafter stated in this Consent Agreement, waives its right to an adjudicatory hearing on any matter, and consents to the waiver of the civil penalty stated in the following Order.

FINDINGS OF FACT AND CONCLUSIONS OF LAW BY COMPLAINANT

1. Respondent operates a facility located on Jersey Avenue in Jersey City, New Jersey. Respondent is a person subject to 40 CFR Part 761.

2. According to the Complaint, on or about April 15, 1981, Respondent had two storage tanks at its facility. One tank had a capacity of 1200 gallons and the other had an 800-gallon capacity. Both tanks contained PCB-contaminated oil, in the large tank at a level of 140 ppm, and in the smaller tank at a level of 2400 ppm. Both tanks are "PCB Containers" as that term is defined in 40 CFR 761.3(v). Both tanks didn't bear the PCB Mark as required by 40 CFR 761.40.

3. According to the Complaint, Respondent's failure to mark two PCB Containers as stated in Paragraph 2, above, constitutes the failure to comply with 40 CFR 761.40, which is a violation of Section 15(1)(C) of TSCA.

4. According to the Complaint, on or about April 15, 1981, Respondent failed to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan for the two

large PCB Containers described in Paragraph 2, above, as required by 40 CFR 761.65(c)(7)(ii).

5. According to the Complaint, Respondent's failure to prepare and implement an SPCC Plan as stated in Paragraph 4, above, constitutes the failure to comply with 40 CFR 761.65(c)(7)(ii) which is a violation of Section 15(1)(C) of TSCA.

6. According to the Complaint, on or about January 21, 1981, Respondent disposed of oil containing PCBs by burning in an incinerator at its facility that was not approved for that purpose. This burning of PCBs is not a method of disposal authorized by CFR 761.60.

7. According to the Complaint, Respondent's disposal of PCBs by burning them in an incinerator as stated in Paragraph 6 above, is a failure to comply with 40 CFR 761.60 which is a violation of Section 15(1)(C) of TSCA.

8. According to the Complaint, on or about April 15, 1981, Respondent failed to prepare and maintain records showing the dates when PCBs and PCB items were disposed of at its facility as required by 40 CFR 761.180.

9. According to the Complaint, Respondent's failure to prepare and maintain records as stated in Paragraph 8, above, constitued the failure to comply with 40 CFR 761.180 which is a violation of Section 15(1)(C) of TSCA.

10. Respondent neither admits nor denies any of these allegations.

RESPONDENT: SUMMIT METALS COMPANY, INC.

By J. G. Kramer

DATE 6/20/84

COMPLAINANT:

DOUGLAS R. BLAZEY
Regional Counsel
Office of Regional Counsel

DATE: August 6, 1984

ORDER

Based upon the foregoing, I conclude that Respondent has violated Section 15(1)(C) of TSCA. Pursuant to Section 16(a) of TSCA, I hereby ORDER that Respondent comply hereafter with all provisions of 40 CFR Part 761. Because of Respondent's inability to pay a civil penalty, no civil penalty is imposed.

SO ORDERED, EFFECTIVE IMMEDIATELY.

RICHARD T. DEWLING
Acting Regional Administrator
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

DATE: August 7, 1984

REFERENCE NO. 15

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF REGULATORY SERVICES
CN 402
TRENTON, N.J. 08625
609 - 292 - 2906

MICHAEL F. CATANIA
DIRECTOR

HERBERT B. BENNETT
DEPUTY DIRECTOR

12 M[illegible]

March 8, 1984

M E M O R A N D U M

TO: Administrator Jorge Berkowitz, HSMA

FROM: Paul H. Kahn, ORS

SUBJECT: Summit Metals, Jersey City, N.J.

Please enter into HRS processing the above-captioned facility, to be ranked for Superfunding.

Toward that end, I would like to set up a meeting with Merry Morris and yourself from HSMA, and Director Michael Catania and Assistant Director Jerry Burke from my office, in order to discuss this matter more fully.

I have enclosed relevant information about this site for your benefit. In brief, this case involves a poor polluter (annual income of approximately $18,000, with little in the way of attachable assets). Unfortunately, inspections of the site, which has been used in the salvage of transformers, have revealed presence of PCB's in quantities as high as 2200 ppm. Department penalties remain unpaid, and the onsite contamination has not been remedied.

EPA has recently signed a consent agreement with the company, whereby EPA accepted the incineration of PCB contamined oils, together with the removal of small amounts of contaminated soil, in lieu of penalty assessments in the amount of $5,000. Although this has been an EPA lead case, I have explained to the EPA enforcement attorney that these measures are wholly inadequate to the Department, and that additional measures, such as application for Superfund, would be taken by the Department. The representatives of EPA had no problems with this recommendation. It is also important to note that all documents and negotiations reflecting this settlement make clear that the company's liability is only

ATTAchment 1

being released as to EPA. In no way, therefore, shall the Department be bound thereby.

Please contact me at your soonest possible convenience, so that a mutually agreeable meeting date can be arranged. I can be reached at 2-2696.

P.H.K.

cc: Director Michael Catania
Assistant Director Jerry Burke
Merry Morris, HSMA
Joe Goliszewski, HSMA

Jerry -
How do you want to handle this ?
Strollo

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

MAY 4 1983

Mr. Joseph A. Rogalski
Assistant Director
Division of Waste Management
New Jersey Department of
Environmental Protection
120 Route 156
Yardville, New Jersey 08620

Re: **Summit Metals Corporation**
Jersey City, New Jersey

Dear Mr. Rogalski:

This is in response to your letter of April 14, 1983 requesting a status report of the EPA enforcement action against Summit Metals Corporation.

An administrative complaint was filed against Summit in June, 1981, charging the company with four violations of the PCB Regulations issued under the Toxic Substances Control Act ("TSCA"). The complaint, copy of which is enclosed, proposed a civil penalty of $35,000. In March, 1982, a settlement was reached, whereby Summit agreed to properly dispose of all PCB-contaminated oil then stored on its premises. The costs of this disposal would remit all or part of a $5,000 civil penalty that was also agreed upon.

Summit's counsel, Mitchell Fishman, Esq., has since advised me on several occasions that Summit has had difficulty in locating a contractor who will remove the PCB-contaminated oil. Apparently this is due to the relatively small quantity of oil in question compounded by the fact that Summit is no longer collecting oil from electric equipment, hence no prospect of repeat business.

I am waiting for Mr. Fishman to advise me that the contaminated oil has been removed so that I can prepare a consent agreement and final order which will resolve this action. Although it appears that the ground at the Summit facility is heavily contaminated with PCBs, a total cleanup of the site seems to be beyond the financial capability of Summit. Ability to pay a penalty is a criterion provided by TSCA that the Agency must consider in settling enforcement proceedings such as this. Accordingly, while we recognize that the settlement we have agreed to with Summit will not completely clean the site, it is the best we could negotiate.

3

I trust this response is helpful in dealing with this company. Please contact me if I may provide you with additional information. I will, of course, send you a copy of the consent agreement and final order when it is signed.

Sincerely yours,

Gregory T. Halbert

Gregory T. Halbert
Attorney
Waste Branch
Office of Regional Counsel

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

In the Matter of SUMMIT METALS COMPANY, INC. Respondent. Proceeding Under Section 16 of the Toxic Substances Control Act	COMPLAINT AND NOTICE OF OPPORTUNITY FOR HEARING Docket No. II TSCA-PCB-81-0120

COMPLAINT

This is a civil administrative action instituted pursuant to Section 16(a) of the Toxic Substances Control Act (TSCA), 15 U.S.C. §2601 et seq. The Complainant is the Director, Enforcement Division, Region II, United States Environmental Protection Agency (EPA). The Respondent is Summit Metals Company, Inc.

This Complaint serves to notice Complainant's preliminary determination that Respondent has violated Section 6(e) of TSCA (and the regulations promulgated pursuant to that Section, 40 CFR Part 761), and Section 15 of TSCA, as hereinafter recited:

1. Respondent operates a facility on Jersey Avenue in Jersey City, New Jersey.

Count I

2. On or about April 15, 1981 Respondent had two storage tanks at its facility. One tank had a capacity of 1200 gallons and the other had a 800-gallon capacity. Both of these tanks contained oil which contained PCBs, in the large tank at a level of 140 parts per million (ppm) and in the small tank at a level of 2400 ppm. Both of these oil storage tanks are "PCB containers" as that term is defined in 40 CFR 761.2(v). Both of these oil storage tanks did not bear the PCB Mark as required by 40 CFR 761.20.

3. Respondent's failure to mark the two PCB containers, as alleged in Paragraph 2, above, constitutes the failure or refusal to comply with 40 CFR 761.20 which constitutes a violation of Section 15(1)(C) of TSCA.

Count II

4. On or about April 15, 1981 Respondent failed to prepare and implement a Spill Prevention Control and Countermeasure Plan (SPCC) for the two large PCB containers referred to in Paragraph 2, above, as required by 40 CFR 761.42(c)(7)(ii).

5. Respondent's failure to prepare and implement a SPCC Plan as alleged in Paragraph 4, above, constitutes the failure or refusal to comply with 40 CFR 761.42(c)(7)(ii) which constitutes a violation of Section 15(1)(C) of TSCA.

Count III

6. On or about January 21, 1981 Respondent disposed of oil containing PCBs by burning it in an incinerator at its facility that was not approved for that purpose. This burning of PCBs is not a method of disposal authorized by 40 CFR 761.10.

7. Respondent's disposal of PCBs by burning them in an incinerator as alleged in Paragraph 6, above, is a failure or refusal to comply with 40 CFR 761.10 which constitutes a violation of section 15(1)(C) of TSCA.

Count IV

8. On or about April 15, 1981 Respondent failed to prepare and maintain records showing the dates when PCBs and PCB Items were disposed of at its facility as required by 40 CFR 761.45(b).

9. Respondent's failure to prepare and maintain records as alleged in Paragraph 8, above, constitutes the failure or refusal to comply with 40 CFR 761.45(b) which constitutes a violation of Section 15(1)(C) of TSCA.

PROPOSED CIVIL PENALTY

Section 16 of TSCA authorizes the assessment of a civil penalty of to $25,000 per day for each violation of TSCA, and the regulations promulgat thereunder. Based upon the facts alleged in this Complaint, and upon the nature, circumstances, extent and gravity of the violations alleged, as well as Respondent's ability to pay, the effect of the proposed penalty upon Respondent's ability to continue to do business, Respondent's history of pri violations and degree of culpability, the following penalties are hereby proposed to be assessed for the violations alleged in this Complaint.

Count I:
Circumstance Level - 3
Extent Category - Significant
Proposed Assessment for this Count: $10,000

Count II:
Circumstance Level - 3
Extent Category - Significant
Proposed Assessment for this Count: $10,000

Count III:
Circumstance Level - 1
Extent Category - Minor
Proposed Assessment for this Count: $5,000

Count IV:
Circumstance Level - 3
Extent Category - Significant
Proposed Assessment for this Count: $10,000

Total: $35,000

OPPORTUNITY TO REQUEST A HEARING

As provided in Section 16(a) of TSCA, and in accordance with Sectior 554 of Title 4, United States Code, you have the right to request a formal hearing to contest any material fact set forth in this Complaint or to contest the appropriateness of the amount of the proposed penalty. To avoid being found in degault and having the above-cited penalty assessed without further proceedings, you must file a written answer to this Complaint, including a request for a formal hearing, with the Regional Hearing Clerk,

U. S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York New York 10278 within fifteen (15) days of your receipt of this Complaint. Your answer should clearly and directly admit, deny, or explain each of the factual allegations contained in this Complaint with regard to which you have any knowledge. Your answer should contain (1) a definite statement of the facts which constitute the grounds of defense, and (2) a concise statement o the facts which you intend to place in issue at the hearing.

The denial of any material fact or the raising of any affirmative defense shall be construed as a request for hearing. Failure to deny any of the factual allegations in this Complaint constitutes admission of the undenied allegations. Your failure to file a written answer within fifteen (15) days of receipt of this Complaint will constitute an admission of all facts alleged in the Complaint and a waiver of your right to a formal hearin to contest any facts alleged in the Complaint. In such event, a Final Order on Default will be issued by the Regional Administrator and the civil penalt proposed herein will be imposed without further proceedings. Such Final Order on Default is not subject to review in any court.

Any hearing that you request will held in the county, parish or incorporated city of your residence. Hearings held on the appropriateness o civil penalties under TSCA will be conducted in accordance with the provisio of the Administrative Procedure Act (5 U.S.C. §552 et seq.) and the "Consolidated Rules of Practice Governing Administrative Assessment of Civil Penalties or the Revocation or Suspension of Permits," 40 CFR §22.01 et seq. 43 FR 34730), a copy of which accompanies this Complaint.

INFORMAL SETTLEMENT CONFERENCE

Whether or not you request a hearing, the EPA encourages settlement of this proceeding consistent with the provisions of TSCA. At an informal conference you may comment on the charges and provide whatever additional information you feel is relevant to the disposition of this matter, includin (1) actions you have taken to correct the violation, (2) the effect the proposed penalty would have on your ability to continue in business or (3) a other special circumstances you care to raise. EPA has the authority to modify the amount of the proposed penalty, where appropriate, to reflect any settlement agreement reached with you in such conference, or to recommend th the Regional Administrator dismiss any or all of the charges, if the circumstances so warrant. Any requests for an informal conference and any othe questions that you may have regarding this Complaint should be directed to Gregory T. Halbert, Attorney, General Enforcement Branch, EPA, Region II, 26 Federal Plaza, New York, New York 10278, telephone (212) 264-5695.

Please note that a request for an informal settlement conference does not extend the fifteen (15) day period during which a written answer an request for a hearing must be submitted. The informal conference procedure may be pursued as an alternative to or simultaneously with the adjudicatory

hearing procedure. However, no penalty reduction will be made simply because such a conference is held. Any settlement which may be reached as a result of such conference shall be embodied in a written Consent Agreement and Final Order to be issued by the Regional Administrator of EPA, Region II and signed by you or your representative. Your signing of such Consent Agreement shall constitute a waiver of your right to request a hearing on any matter stipulated to therein.

If you have neither effected a settlement by informal conference nor requested a hearing within the fifteen-day period cited above, the assessed penalty will be imposed without further proceedings.

PAYMENT OF PENALTY

Instead of filing an answer requesting a hearing or requesting an informal settlement conference, you may choose to pay the proposed penalty. Such payment should be made by sending to the Regional Hearing Clerk, EPA, Region II, a cashier's or certified check in the amount of the penalty assessed in this Complaint. Your check must be made payable to the United States of America.

Dated: New York, New York

June 11, 1981

JULIO MORALES-SANCHEZ
Director
Enforcement Division
U. S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

TO: Mr. Julius Brower
Manager
Summit Metals Company, Inc.
Foot of Jersey Avenue
Jersey City, New Jersey 07302

cc: George J. Tyler, Esq.
Director, Division of Environmental Quality
New Jersey Department of Environmental
Protection

CERTIFICATE OF SERVICE

This is to certify that on the 15th day of June, 1981 I ser true and correct copy of the foregoing Complaint by certified mail to Mr. Julius Brower, Manager, Summit Metals Company, Inc., Foot of Jersey Avenue, Jersey City, New Jersey 07302. I handcarried the original and two copies the foregoing Complaint to the Regional Hearing Clerk.

/s/ [illegible]
ANTOINETTE M. TEDESCO
Clerk-Stenographer

bcc: Marilyn Bacarella, (EN-342)
Kenneth Eng, (2 PM-PA)
Daniel Kraft, (2 SA-ERHMI)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

In the Matter of SUMMIT MEALS COMPANY, INC., Respondent. Proceeding Under Section 16 of the Toxic Substances Control Act	CONSENT AGREEMENT AND FINAL ORDER Docket No. II TSCA-PCB-81-0120

PRELIMINARY STATEMENT

This civil proceeding for the assessment of a penalty was initiated pursuant to Section 16(a) of the Toxic Substances Control Act ("TSCA"), 15 U.S.C. §2601 et seq. The Complainant in this proceeding, the Director of the Enforcement Division, Region II of the United States Environmental Protection Agency ("EPA"), issued a Complaint and Notice of Opportunity for Hearing to Respondent, Van Dyk and Company, Inc., on June 11, 1981. Said Complaint charged Respondent with violations of Regulations governing the Disposal and Marking of Polychlorinated Biphenyls ("PCBs"), 40 CFR Part 761, which were promulgated pursuant to Section 6(e)(1) of TSCA.

This Consent Agreement and Final Order of the Regional Administrator are in full settlement of all liabilities which might have attached as a result of this proceeding. Respondent admits

the jurisdictional allegations of the Complaint, admits the facts hereinafter stated in this Consent Agreement, waives its right to an adjudicatory hearing on any matter, and consents to the assessment of the civil penalty stated in the following Order.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. Respondent operates a facility located on Jesey Avenue in Jersey City, New Jersey. Respondent is a person subject to 40 CFR Part 761.

2. On or about April 15, 1981, Respondent had two storage tanks at its facility. One tank had a capacity of 1200 gallons and the other has a 800-gallon capacity. Both of these tanks contained PCB-contaminated oil, in the large tank at a level of 140 ppm, and in the smaller tank at a level of 2400 ppm. Both of these oil storage tanks are "PCB Containers" as that term is defined in 40 CFR 761.2(v). Both of these oil storage tanks did not bear the PCB Mark as required by 40 CFR 761.40.

3. Respondent's failure to mark two PCB Containers, as stated in Paragraph 2, above, constitutes the failure or refusal to comply with 40 CFR 761.40, which is a violation of Section 15(1)(C) of TSCA.

4. On or about April 15, 1981, Respondent failed to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan for the two large PCB Containers described in Para-

graph 2, above, as required by 40 CFR 761.65(c)(7)(ii).

5. Respondent's failure to prepare and implement an SPCC Plan as stated in Paragraph 4, above, constitutes the failure or refusal to comply with 40 CFR 761.65(c)(7)(ii) which is a violation of Section 15(1)(C) of TSCA.

6. On or about January 21, 1981, Respondent disposed of oil containing PCBs by burning it in an incinerator at its facility that was not approved for that purpose. This burning of PCBs is not a method of disposal authorized by 40 CFR 761.60.

7. Respondent's disposal of PCBs by burning them in an incinerator as stated in Paragraph 6, above, is a failure or refusal to comply with 40 CFR 761.60 which is a violation of Section 15(1)(C) of TSCA.

8. On or about April 15, 1981, Respondent failed to prepare and maintain records showing the dates when PCBs and PCB Items were disposed of at its facility as required by 40 CFR 761.180.

9. Respondent's failure to prepare and maintain records as stated in Paragraph 8, above, constitutes the failure or refusal to comply with 40 CFR 761.180 which is a violation of Section 15(1)(C) of TSCA.

RESPONDENT: BY: _____

DATE: _____

COMPLAINANT: BY: _____
BARBARA METZGER
Director
Environmental Services
Division
U.S. Environmental
Protection Agency
Region II

DATE: _____

ORDER

Based upon the foregoing findings of fact and conclusions of law, I conclude that Respondent has violated the PCB Marking and Disposal Regulations which is a violation of Section 15(1)(C) of TSCA. Pursuant to Section 16(a) of TSCA it is hereby ORDERED that Respondent comply hereafter with all provisions of 40 CFR Part 761. Pursuant to Section 16(a) of TSCA, I hereby assess a civil penalty of $5,000 for Respondent's violations of the PCB Regulations. Respondent has voluntarily disposed by incineration of all PCB-contaminated oil stored on its premises. I have considered these costs of disposal, which are in excess of

$5,000, plus Respondent's limited financial resources, and hereby ORDER that Respondent is not required to pay the assessed penalty.

JACQUELINE E. SCHAFER
Regional Administrator
U.S. Environmental
Protection Agency
Region II

DATE: _____

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN 027, TRENTON, N.J. 08625

May 7, 1981

Mr. Arthur H. Gevirtz
Building 209
Environmental Protection Agency
Edison, NJ 08817

Dear Mr. Gevirtz:

During an investigation of Summit Metals Co., Inc. located at Foot of Jersey Avenue, Jersey City, New Jersey, several oil samples were taken by personnel of the Newark Field Office of the Bureau of Air Pollution Control Operations. These samples were submitted to Stablex-Reutter, Inc., Camden, New Jersey, for analysis to determine the presence and amount of polychlorinated biphenyls. The following table lists the date, source and results of the analyses of the four samples taken:

Sample No.	Date	Source	Analysis
20798	1/21/81	Feed line to incinerator	510 ppm
20819	2/18/81	250 gal. tank (feed for incinerator)	310 ppm
20821	2/18/81	11 ft. transformer case to store oil	2200 ppm
20825	2/18/81	12 ft. transformer case to store oil	1 ppm

Attached are copies of our field reports and the laboratory report.

Summit Metals is involved in the salvage of transformers. The company drains the fluid from the transformers and then burns out the transformers in an on-site incinerator. Some of this oil is blended and used on site as fuel oil for the incinerator and some is sold to C. Finch Oil Company in Jersey City.

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Because this incinerator predates the New Jersey Law on Permits (N.J.S.A. 26:2C-9.2) and the supplementing administrative regulation (N.J.A.C. 7:27-8), the operation does not violate any state air pollution control requirements. I am therefore, referring this to you for action inasmuch as it appears to be a violation of an EPA requirement.

If you need any additional information on this matter, please consult with Mr. Ernest Mancini, Chief, Bureau of Air Pollution Control Operations, at this address or by telephone at 609-~~984~~-3024. I should also appreciate your keeping us advised of your actions in this matter.

25-1

Sincerely,

Herbert Wortreich

Herbert Wortreich
Assistant Director
Air and Noise Quality

HW:EM:sg

cc Mr. Kuhrtz
Mr. Londres
Mr. Pluta

17

Air-31
Dec 68

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY AIR POLLUTION CONTROL CODE
CHAPTER 10 FIELD REPORT

DATE 1-21-81 TIME OF SAMPLING 2:15 a.m. p.m. 2:30 a.m. p.m.

STATE HEALTH DISTRICT Newark COUNTY Hudson

Part 1 — COMPANY INFORMATION

FULL BUSINESS NAME Summit Metals Co. Inc

MAILING ADDRESS foot of Jersey Ave Jersey City N.J. 07302
No. Street Post Office Zip Code

LOCATION Same
No. Street Post Office Zip Code

Book Plate ____ Lot ____ Block ____

TYPE OF OWNERSHIP	NAME OF OWNER, PARTNER, OFFICERS, OFFICIALS	TITLE
Individual		
Partnership		
Corporation X	MR. BAUER	Owner
Municipal (type)		

Person(s) interviewed & title(s) BAUER

Remarks

Part 2 — SAMPLE INFORMATION

NAME OF SUPPLIER(S) —

ADDRESS OF SUPPLIER —
No. Street Post Office Zip Code

GRADE OF OIL: ____ DATE OF LAST DELIVERY ____ TEMP. OF OIL ____

SAMPLED BY: BAUER TITLE ____

SAMPLE TAKEN FROM: TANK # 1 TRUCK # ____ OTHER TRANSFORMERS

QUANTITY OF OIL IN TANK: 200 GAL. TOTAL TANK CAPACITY: 275 GAL

TYPE OF SAMPLING:

A. DIP SAMPLE: TRAVERSE - TANK AVERAGE ☐ TOP ☐ MIDDLE ☐ BOTTOM ☐

B. SAMPLING VALVE ON TANK: 1/2"

C. CIRCULATION SAMPLE: X D. SAMPLE AT BURNER YES

BLENDING FACILITIES: NO ☑ YES ☐ DESCRIPTION: ____

FIELD SAMPLE # 20795 DUPLICATE SAMPLE LEFT WITH BAUER

DATE SUBMITTED FOR ANALYSIS: ____ SUBMITTED TO ____ LAB SAMPLE # ____

DATE ANALYZED: ____ BY: ____
Company a Address

Part 3 — RESULTS

ANALYSIS:

% SULFUR: ____ VISCOSITY: ____ API GRAVITY: ____

POUR POINT: ____ BTU VALUE: ____

RECOMMENDATIONS: ____

COMMENTS:

510 ppm PCB (Polychlorinated Biphen

Air-31
Dec 68

NEW JERSEY STATE DEPARTMENT
OF ENVIRONMENTAL PROTECTION

NEW JERSEY AIR POLLUTION CONTROL CODE
CHAPTER 10 FIELD REPORT

DATE 2-18-81 TIME OF SAMPLING 10 00 a.m. 10 30 a.m.
STATE HEALTH DISTRICT Newark COUNTY Hudson

Part 1 — COMPANY INFORMATION

FULL BUSINESS NAME Summit Metals
MAILING ADDRESS No. 41 Street Jersey Ave Post Office Jersey City Zip Code
LOCATION No. Street Post Office Zip Code
Book Plate Lot Block

TYPE OF OWNERSHIP	NAME OF OWNER, PARTNER, OFFICERS, OFFICIALS	TITLE
Individual		
Partnership		
Corporation X		
Municipal (type)		

Person(s) interviewed & title(s)
Remarks

Part 2 — SAMPLE INFORMATION

NAME OF SUPPLIER(S) Self
ADDRESS OF SUPPLIER No. Street Post Office Zip Code
GRADE OF OIL: Ransfurnace DATE OF LAST DELIVERY TEMP. OF OIL
SAMPLED BY: TITLE
SAMPLE TAKEN FROM: TANK # TRUCK # OTHER 25291L
QUANTITY OF OIL IN TANK: GAL. TOTAL TANK CAPACITY: GAL
TYPE OF SAMPLING:
A. DIP SAMPLE: TRAVERSE - TANK AVERAGE ☐ / TOP ☐ - MIDDLE ☒ BOTTOM ☐
B. SAMPLING VALVE ON TANK:
C. CIRCULATION SAMPLE: D. SAMPLE AT BURNER
BLENDING FACILITIES: NO ☐ YES ☐ DESCRIPTION:

FIELD SAMPLE # 20819 DUPLICATE SAMPLE LEFT WITH GRACE
DATE SUBMITTED FOR ANALYSIS: SUBMITTED TO LAB SAMPLE # B2408
DATE ANALYZED: BY: Company Address

Part 3 — RESULTS

ANALYSIS:
% SULFUR: VISCOSITY: API GRAVITY:
POUR POINT: BTU VALUE:
RECOMMENDATIONS:

COMMENTS:

310 ppm (PCB) polychlorinated Biphenyl

PCB's

19

Air-31
Dec 68

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY AIR POLLUTION CONTROL CODE CHAPTER 10 FIELD REPORT

DATE 2-15-71 TIME OF SAMPLING 10 a.m. 10:30 a.m.
STATE HEALTH DISTRICT Newark COUNTY Hudson

Part 1 — COMPANY INFORMATION

FULL BUSINESS NAME Simmet Metals
MAILING ADDRESS ___ Ft Jersey Ave Jersey City
(No. / Street / Post Office / Zip Code)
LOCATION ___
(No. / Street / Post Office / Zip Code)
Book Plate ___ Lot ___ Block ___

TYPE OF OWNERSHIP	NAME OF OWNER, PARTNER, OFFICERS, OFFICIALS	TITLE
Individual		
Partnership		
Corporation X		
Municipal (type)		

Person(s) interviewed & title(s) ___
Remarks ___

Part 2 — SAMPLE INFORMATION

NAME OF SUPPLIER(S) Self.
ADDRESS OF SUPPLIER ___
(No. / Street / Post Office / Zip Code)
GRADE OF OIL: Transformer DATE OF LAST DELIVERY ___ TEMP. OF OIL ___
SAMPLED BY: ___ TITLE ___
SAMPLE TAKEN FROM: TANK # ___ TRUCK # ___ OTHER 10 FT Transfo
QUANTITY OF OIL IN TANK: ___ GAL. TOTAL TANK CAPACITY: ___ GAL
TYPE OF SAMPLING:
A. DIP SAMPLE: TRAVERSE - TANK AVERAGE ☐ TOP ☐ MIDDLE ☒ BOTTOM ☐
B. SAMPLING VALVE ON TANK: ___
C. CIRCULATION SAMPLE: ___ D. SAMPLE AT BURNER ___
BLENDING FACILITIES: NO ☐ YES ☐ DESCRIPTION: ___

FIELD SAMPLE # 20821 DUPLICATE SAMPLE LEFT WITH Baumer
DATE SUBMITTED FOR ANALYSIS: ___ SUBMITTED TO ___ LAB SAMPLE # B3409
DATE ANALYZED: ___ BY: ___
(Company / a Address)

Part 3 — RESULTS

ANALYSIS:
% SULFUR: ___ VISCOSITY: ___ API GRAVITY: ___
POUR POINT: ___ BTU VALUE: ___
RECOMMENDATIONS: ___

COMMENTS:

2200 PPM (PCB) Polychlorinated Biphenyl

20

2/15/71

Sanitary Engineer

Air-31
Dec 68

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY AIR POLLUTION CONTROL CODE
CHAPTER 10 FIELD REPORT

DATE 2-18-81 TIME OF SAMPLING 10:00 a.m. 10:30 a.m.
STATE HEALTH DISTRICT Newark COUNTY Hudson

Part 1 — COMPANY INFORMATION

FULL BUSINESS NAME Summit Metals
MAILING ADDRESS FT Jersey Ave Jersey City (No. / Street / Post Office / Zip Code)
LOCATION — (No. / Street / Post Office / Zip Code)
Book Plate ____ Lot ____ Block ____

TYPE OF OWNERSHIP — NAME OF OWNER, PARTNER, OFFICERS, OFFICIALS — TITLE

Type of Ownership	Name of Owner, Partner, Officers, Officials	Title
Individual		
Partnership		
Corporation X		
Municipal (type)		

Person(s) interviewed & title(s) ____
Remarks ____

Part 2 — SAMPLE INFORMATION

NAME OF SUPPLIER(S) Self
ADDRESS OF SUPPLIER ____ (No. / Street / Post Office / Zip Code)
GRADE OF OIL: Transformer DATE OF LAST DELIVERY ____ TEMP. OF OIL ____
SAMPLED BY: ____ TITLE ____
SAMPLE TAKEN FROM: TANK # ____ TRUCK # ____ OTHER 12 FT Transformer
QUANTITY OF OIL IN TANK: ____ GAL. TOTAL TANK CAPACITY: ____ GAL.
TYPE OF SAMPLING:
A. DIP SAMPLE: TRAVERSE - TANK AVERAGE ☐ TOP ☐ MIDDLE ☐ BOTTOM ☐
B. SAMPLING VALVE ON TANK: 1/2" - bottom - 12 ft Tank
C. CIRCULATION SAMPLE: ____ D. SAMPLE AT BURNER ____
BLENDING FACILITIES: NO ☐ YES ☐ DESCRIPTION: ____

FIELD SAMPLE # 20825 DUPLICATE SAMPLE LEFT WITH ____
DATE SUBMITTED FOR ANALYSIS: ____ SUBMITTED TO ____ LAB SAMPLE # B3410
DATE ANALYZED: ____ BY: ____ (Company / Address)

Part 3 — RESULTS

ANALYSIS:
% SULFUR: ____ VISCOSITY: ____ API GRAVITY: ____
POUR POINT: ____ BTU VALUE: ____
RECOMMENDATIONS: ____

COMMENTS:

<1 ppm (PCB) Poly chlorinated biphenyl

PCB's

[signature]

21

HUDSON REGIONAL HEALTH COMMISSION

313 HARRISON AVENUE
HARRISON, N.J. 07029

REPORT OF FIELD INVESTIGATION

DATE 12/4/80 TIME 12:50 FILE#

REFERENCE TO CHAPTER

FULL BUSINESS NAME Summit Metals

Location ____ (No.) Foot of Jersey Avenue (Street) Jersey City (Municipality)

Mailing Address same (No. / Street / Post Office / Zip Code)

Person(s) Interviewed Julie Brauer owner (Title)

_____ (Title)

Comments _____

Report Requested by _____ (Title)

Purpose of Investigation follow up

Observations Summit Metals handles large quantities of transformers which it bre down for scrap. Some of the transformers contain 4-6 gallons of oil, others contain 2-3 quarts of residual oil according to Mr. Brauer. Mr. Brauer said that he has no knowledge of PCB's or of the possibility that certain transformer oils contain PCB's. He receives the majority of his transformers fro other dealers. The transformer oil is drained and stored on the premises of Summit Metals. Most of it is resold. Mr. Brauer said he doesn't know how it

Conclusions is used but that it burns well and can be mixed with fuel oil. Some o the oil is burned in the firms' incinerator to aid in the combustion of flam mable portions of the transformers. Two samples of the oil were taken from a large storage vessel at the site. Sample #20546 will be submitted to DEP

Recommendations Tech. Services via NFO on 12/5/80.

(Milt Polokobic 609-984-3027)

22

Investigated by Gary Garetano, Inspector

HUDSON REGIONAL HEALTH COMMISSION

313 HARRISON AVENUE
HARRISON, N.J. 07029

REPORT OF FIELD INVESTIGATION

DATE 12/29/80 TIME 3:50pm FILE#

REFERENCE TO CHAPTER

FULL BUSINESS NAME Summit Metals

Location Foot of Jersey Avenue (No. / Street) Jersey City (Municipality)

Mailing Address (No. / Street / Post Office / Zip Code)

Person(s) Interviewed Julie Brauer — owner (Title)

(Title)

Comments

Report Requested by (Title)

Purpose of Investigation

Observations Another sample of transformer oil labeled #20229 was taken. The sample was from a bucket which according to Mr. Brauer had just been filled from the large storage tank. Tom Leonard of NFO was contacted to obtain results of the previous sampling. Sample #20546 contained 23.25 PPM of PCB's.

Conclusions

Recommendations

23

Investigated by Gary Garetano, Inspector

(Signed)

HUDSON REGIONAL HEALTH COMMISSION

313 HARRISON AVENUE
HARRISON, N.J. 07029

REPORT OF FIELD INVESTIGATION

DATE 2/6/81 TIME _____ FILE#

REFERENCE TO CHAPTER _____

FULL BUSINESS NAME Summit Metals

Location Foot of Jersey Avenue (No. / Street) Jersey City (Municipality)

Mailing Address _____ (No. / Street) _____ (Post Office) _____ (Zip Code)

Person(s) Interviewed _____ _____ (Title)

_____ _____ (Title)

Comments _____

Report Requested by _____ (Title)

Purpose of Investigation _____

Observations Tom Leonard of N.J. DEP reported that sample #20229 contained 320 ppm. This sample was taken from a bucket which was filled from the large transformer tank according to Julie Brauer. Bob Esposito (DEP) has take a transformer oil sample from a 275 gallon capacity tank which feeds directly into the incinerator.

Conclusions _____

Recommendations _____

24

Investigated by Gary Garetano, Inspector

REFERENCE NO. 16

Form DWR- 138
11/80

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTEC
DIVISION OF WATER RESOURCES

PERMIT NO. 26-5659

APPLICATION NO. 26-23-621

COUNTY Hudson

WELL RECORD

1. OWNER State of New Jersey ADDRESS _____
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Liberty State Park, Jersey City, New Jersey
3. DATE COMPLETED May 24, 1982 DRILLER Handex Corp.
4. DIAMETER: Top _____ inches Bottom _____ inches TOTAL DEPTH 26' Feet
5. CASING: Type PVC Diameter 12 Inches Length 11' Feet
6. SCREEN: Type PVC Size of Opening 0.030 Diameter 12 Inches Length 15' Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet } Geologic Formation _____
   Tail Piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY NO Gallons per minute at _____ Feet above surface
   Water rises to N/A Feet above surface
8. RECORD OF TEST: Date June 30 thru July 3 Yield 40 Gallons per minute
   Static water level before pumping 4.38' Feet below surface
   Pumping level 18.15' feet below surface after 72 hours pumping
   Drawdown 13.77' Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How pumped submersible pump How measured M-scope
   Observed effect on nearby wells N/A
9. PERMANENT PUMPING EQUIPMENT:
   Type N/A Mfrs. Name N/A
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR 3 day pump test AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER poor Sample: Yes ____ No X
    Taste none Odor none Color clear Temp. 54 °F.
12. LOG (over) Are samples available? no
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA field
14. DATA OBTAINED BY field technicians Date July 3, 1982

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

Attachment D.

Boring Log

0'-26' FILL, CINDERS, WOOD CHIPS, BRICKS, COBBLES

26' CHANGE Black organic SILT

LOCATION Liberty State Park LEVEL 2.5 ft.

DRILLING METHOD conventional SAMPLING METHOD split spoon, 300 lb. hammer

CASING: Type PVC Diameter 4 in. Length 11 ft.

SCREEN: Type 0.020 slot Diameter 4 in. Length 15 ft.

GRAVEL PACK yes X no ____ Gravel Size No. 1 Total Depth 26 ft.

SANITARY SEAL yes X no ____ Type bentonite pellets

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS	
		0'-27'	FILL
			Fill, assorted bricks, silt, clay
			Possible road bed
5'		--Change	Black cinders, wood chips-coating silt & clay
	Sample 1 5'-7' Push	S-1	5'-7' Soft, dark brown, angular gravel, silt & clay matrix-soupy 6'6"-7' Hard zone, cobbles, concrete, brick
	Sample 2 8'-10' 1-1-4-4	S-2	Red brown clayey SILT, some+ medium to fine sand, trace+ very fine gravel
10'			
	Sample 3 10'-12' 3-1-1-1	S-3	Fill, poor recovery, cinders, gravel, slight silt & clay matrix, 1" maximum size
	Sample 4 14'-16' 2-1-1-3	S-4	Black cinders, 0.5" maximum size, shells 15'6" Shell zone, white coarse to fine grain size, saturated
	Sample 5 18'-20' 1-1-0-1	S-5	Fill, black cinders, shells, gravel, brick--smallest size very fine sand to 3/4" gravel
20'			
	Sample 6 23'-25' Push	S-6	Shells, cemented cinders
25'			
	Sample 7 25'-27' 3-1-0-0	S-7	Shells, no recovery
	Sample 8 27'-29' Push	--Change S-8	Black clayey SILT, trace shells
30'			

GEOLOGIST Greg Reuter DRILLER Don Grahamer

PROJECT Liberty State Park

WELL NO. 2

DATE DRILLED 2-16-82

STATIC WATER LEVEL

LANDEX Corp.
703 Gines Drive
Mercanville, New Jersey 07751
(201) 516 8900

PERMIT NO. 26-5490

APPLICATION NO.

COUNTY Hudson

USE test-heat pump system

LOCATION Liberty State Park, Jersey City, NJ

OWNER Liberty State Park ADDRESS Morris Pesin Drive, Jersey City

DRILLING METHOD auger SAMPLING METHOD cuttings

DIAMETER: Top Bottom Inches TOTAL DEPTH 26' Feet

CASING: Type steel Diameter Inches Length 11 Feet

SCREEN: Type steel Size of Opening 0.030 Diameter Inches Length 15 Feet

GRAVEL PACK Yes X No GRAVEL SIZE #2

SANITARY SEAL Yes X No TYPE bentonite GEOLOGIC FRM

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS	IDENTIFICATION OF SOILS REMARKS
10'		0'-26' FILL, cinders, wood chips, etc.
20'		0.030 Slot Well Screen
30'		

MAR 8 AM

4

REFERENCE NO. 17

Surface Water Quality Standards

N.J.A.C. 7:9B

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

Office of Land and Water Planning
April 1994

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. To find unnamed waterways or waterbodies or named waterways or waterbodies which do not appear in the listing, use the following instructions:
   i. Unnamed or unlisted freshwater streams that flow into streams classified as FW2-TP, FW2-TM, or FW2-NT take the classification of the classified stream they enter, unless the unlisted stream is a PL water which is covered in (b)5vii below. If the stream could be a C1 water, see (b)5vi below.
   ii. All freshwater lakes, ponds and reservoirs that are five or more acres in surface area, that are not located entirely within the Pinelands Area boundaries (see (b)5vii below) and that are not specifically listed as FW2-TP or FW2-TM are classified as FW2-NT. This includes lakes, ponds and reservoirs on segments of streams which are classified as FW2-TM or FW2-TP such as Saxton Lake on the Musconetcong River. If the waterbody could be a C1 water, also check (b)5vi below.
   iii. All freshwater lakes, ponds and reservoirs, that are less than five acres in surface area, upstream of and contiguous with FW2-TP or FW2-TM streams, and which are not located entirely within the Pinelands Area boundaries (see(b)5vii below) are classified as FW2-TM. All other freshwater lakes, ponds and reservoirs that are not otherwise classified in this subsection or the following Tables are classified as FW2-NT. If the waterbody could be a C1 water, also check (b)5vi below.
   iv. Unnamed or unlisted streams that enter FW2 lakes, ponds and reservoirs take the classification of either the listed tributary stream flowing into the lake with the highest classification or the listed tributary stream leaving the lake with the highest classification, whichever has the highest classification, or, if there are no listed tributary or outlet streams to the lake, the first listed stream downstream of the lake. If the stream is located within the boundaries of the Pinelands Area, see (b)5.vii. below; if it could be a C1 water, also see (b)5vi below.
   v. Unnamed or unlisted saline waterways and waterbodies are classified as SE1 in the Atlantic Coastal Basin. Unnamed or unlisted saline waterways which enter SE2 or SE3 waters in the Passaic, Hackensack and New York Harbor Complex basin are classified as SE2 unless otherwise classified within Table 3 in (e) below. Freshwater portions of unnamed or unlisted streams entering SE1, SE2, or SE3 waters are classified as FW2-NT. This only applies to waters that are not PL waters (see (b)5vii below). If the waterbody or waterway could be a C1 water, also see (b)5vi below.
   vi. If the waterway or waterbody of interest flows through or is entirely located within State parks, forests or fish and game lands, Federal wildlife refuges, other special holdings, or is a State shellfish water as defined in this subchapter, the Department's maps should be checked to determine if the waterbody of interest is mapped as a C1 water. If the waterway or waterbody does not appear on the United States Geological Survey quadrangle that the Department used as a base map in its designation of the

HAVEMEYER BROOK (Mahwah) - Entire length	FW2-TP(C1)
HEWITT BROOK (W. Milford) - Entire length	FW2-TP(C1)
HIBERNIA BROOK	
(Marcella) - Source to first Green Pond Road bridge downstream of Lake Emma	FW2-TP(C1)
(Hibernia) - First Green Pond Road bridge to confluence with Beaver Brook	FW2-TM
TRIBUTARY	
(Lake Ames) - Source to, but not including, Lake Ames	FW2-TP(C1)
HIGH MOUNTAIN BROOK (Ringwood) - Source to, but not including, Skyline Lake	FW2-TP(C1)
HOHOKUS BROOK (Hohokus) - Entire length	FW2-NT/SE2
HUDSON RIVER	
(Rockleigh) - River and saline portions of New Jersey tributaries from the New Jersey-New York boundary line in the north to its confluence with the Harlem River, New York	SE1
(Englewood Cliffs) - River and saline portions of New Jersey tributaries from the confluence with the Harlem River, New York to a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, New York)	SE2
TRIBUTARIES	
(Rockleigh) - Freshwater portions of tributaries to the Hudson River in New Jersey	FW2-NT
INDIAN GROVE BROOK (Bernardsville) - Entire length	FW2-TP(C1)
JACKSON BROOK	
(Mine Hill) - Source to the boundary of Hurd Park, Dover	FW2-TP(C1)
(Dover) - Hurd Park to Rockaway River	FW2-NT
JENNINGS CREEK (W. Milford) - State line to Wanaque River	FW2-TP(C1)
JERSEY CITY RESERVOIR (Boonton)	FW2-TM
KANOUSE BROOK (Newfoundland) - Entire length	FW2-TP(C1)
KIKEOUT BROOK (Butler) - Entire length	FW2-NT
KILL VAN KULL (Bayonne) - Westerly from a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, New York)	SE3
LAKE RICKONDA OUTLET STREAM (Monks) - That segment of the outlet stream from Lake Rickonda within Ringwood State Park	FW2-TM(C1)
LAKE STOCKHOLM BROOK	
(Stockholm) - Entire length, except tributaries described separately below	FW2-TP(C1)
(Stockholm) - Portion of westerly tributary, from its	FW1(tp)

REFERENCE NO. 18

MALCOLM PIRNIE, INC.	PROJECT NOTES

To: File	Date: April 6, 1995
From: Lilli Gonzalez	Project #: 8003-411
Subject: Sensitive Environments	Site Name: Summit Metals Inc.

The attached information was used to determine the location and types of sensitive environments located within 4 miles of the site and along the 15 mile surface water pathway. Specific information contained in this letter is considered confidential and, therefore, cannot be incorporated into this report. However, based on a review of the information, it was determined that there are 4 habitats for state endangered species within 4 miles of the site. There is 1 known habitat for an endangered species located along the surface water pathway.

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Division of Parks and Forestry
Office of Natural Lands Management
Natural Heritage Program
CN 404
Trenton, NJ 08625-0404
Tel. #609-984-1339
Fax. #609-984-1427

Robert C. Shinn, Jr.
Commissioner

April 4, 1995

Lilli Gonzalez
Malcom Pirnie, Inc.
104 Interchange Plaza
Cranbury, NJ 08512-9543

Re: Summit Metals Inc. and Associated Waterways

Dear Ms. Gonzalez:

Thank you for your data request regarding rare species information for the above referenced project site in Hudson County.

The Natural Heritage Data Base does not have any records for rare plants, animals, or natural communities on the Summit Metals Inc. site. However, there is a record for an occurrence for a rare species which may be on, or in the immediate vicinity of the waterways that you have associated with this site. The attached list provides additional information about this occurrence. Also attached is a list of rare species from records in the general vicinity of the project site (within approximately 4 miles).

Also attached is a list of rare species and natural communities which have been documented from Hudson County. If suitable habitat is present at the project site, these species have potential to be present. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend you contact the Division of Fish, Game and Wildlife, Endangered and Nongame Species Program.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and natural communities. One of these sites is located within or near the areas you have outlined. Please refer to the enclosed Priority Site Map of the Jersey City

USGS quadrangle for the location and boundary of this site. Also attached is a report describing the significance of the Priority Site, and the rare species documented from within the site.

In order to red flag the general locations of documented occurrences of rare and endangered species and natural communities, we have prepared computer generated Natural Heritage Index Maps. Enclosed please find these maps for the Jersey City USGS quadrangle.

PLEASE SEE THE ATTACHED 'CAUTIONS AND RESTRICTIONS ON NHP DATA'.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Elena A. Williams

Elena A. Williams
Senior Planner

cc: Lawrence Niles
Thomas Hampton
NHP File No. 95-4007461

REFERENCE NO. 19

MALCOLM PIRNIE, INC.	PROJECT NOTES

To: File	Date: March 31, 1995
From: Lilli M. Gonzalez	Project #: 8003-411
Subject: Four-mile Radius Populations	Site Name: Summit Metals Inc.

Population estimation within four miles of the Aiello Property Site was accomplished using the Topologically Integrated Geographic Encoding and Referencing (TIGER) data base. The results of the data base analysis is shown in the table below.

Ring (miles)	Population
0 - ¼	800
¼ - ½	7,206
½ - 1	33,361
1 - 2	118,802
2 - 3	213,823
3 - 4	393,661
TOTAL POPULATION WITHIN 4 MILES:	767,653

1

FROST ASSOCIATES

P.O.Box 495, Essex, Connecticut 06426
(203) 767-7644 FAX (203) 767-1971

March 27, 1995

To: Malcolm Pirnie Inc
104 Interchange Plaza
Cranbury, New Jersey 08512-8543

Attn: Lilli Gonzalez

Fr: Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Summit Metals., Inc. NEW YORK PORTION
Jersey City, NJ

CERCLIS:

Job: 8003-411-701

Site Longitude: 74-03-08.00 74.052223
Site Latitude : 40-42-49.00 40.713612

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and

E. The formula can be expressed:

Area = 1/2{Xa(Ye-Yb)+ Xb(Ya-Yb)+ Xc(Yb-Yd)+ Xd(Yc-Ye)+ Xe(Yd-Ya)}

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 populu tion and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: ((Drilled + Dug Wells) / Households) * Population

Summit Metals., Inc.
Jersey City, NJ

NEW YORK PORTION

No.	City	Block Group ID	Blk Grp	People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Brooklyn	36047 0001	1	1305	780	779	0	0	0
2	Brooklyn	36047 0001	2	2010	1378	1419	0	0	0
3	Brooklyn	36047 0001	3	139	77	61	0	0	0
4	Brooklyn	36047 0005	1	1424	949	933	0	9	0
5	Brooklyn	36047 0005	2	1064	795	847	0	0	0
6	Brooklyn	36047 0005	3	1078	535	488	0	6	0
7	Brooklyn	36047 0005	4	961	638	609	0	0	0
8	Brooklyn	36047 0005	5	1468	1054	1079	0	0	0
9	Brooklyn	36047 0007	1	1147	681	696	0	0	0
10	Brooklyn	36047 0007	2	706	469	460	0	0	0
11	Brooklyn	36047 0007	3	847	474	461	0	0	0
12	Brooklyn	36047 0009	1	1135	760	745	0	0	0
13	Brooklyn	36047 0009	2	683	385	392	0	0	0
14	Brooklyn	36047 0011	1	70	18	16	0	0	0
15	Brooklyn	36047 0013	1	1585	1049	1064	0	0	0
16	Brooklyn	36047 0013	3	78	31	33	0	0	0
17	Brooklyn	36047 0018	1	4	3	3	0	0	0
18	Brooklyn	36047 0021	1	256	119	114	0	0	0
19	Brooklyn	36047 0021	2	119	44	59	0	0	0
20	Brooklyn	36047 0021	3	28	5	0	0	0	0
21	Brooklyn	36047 0021	4	16	10	16	0	0	0
22	Brooklyn	36047 0023	1	5106	1523	1569	0	0	0
23	Brooklyn	36047 0025	1	1344	407	407	0	0	0
24	Brooklyn	36047 0025	2	252	120	74	0	0	0
25	Brooklyn	36047 0027	1	326	95	99	0	0	0
26	Brooklyn	36047 0027	2	249	106	102	0	0	0
27	Brooklyn	36047 0031	2	699	104	117	0	0	0
28	Brooklyn	36047 0031	3	2189	862	867	0	0	0
29	Brooklyn	36047 0032	1	2	1	0	0	0	0
30	Brooklyn	36047 0033	2	1010	479	464	0	6	0
31	Brooklyn	36047 0037	1	168	88	83	0	0	0
32	Brooklyn	36047 0037	2	100	52	62	0	0	0
33	Brooklyn	36047 0041	1	882	434	483	0	0	0
34	Brooklyn	36047 0041	2	1090	452	375	0	0	0
35	Brooklyn	36047 0041	3	888	452	347	0	0	0
36	Brooklyn	36047 0041	4	455	281	343	0	0	0
37	Brooklyn	36047 0043	1	713	15	13	0	0	0
38	Brooklyn	36047 0043	2	588	314	348	0	17	0
39	Brooklyn	36047 0043	3	748	447	444	0	0	0
40	Brooklyn	36047 0043	4	690	334	382	0	0	0
41	Brooklyn	36047 0045	1	1073	572	584	0	0	0
42	Brooklyn	36047 0045	2	752	393	377	0	9	0
43	Brooklyn	36047 0045	3	714	393	405	0	0	0
44	Brooklyn	36047 0045	4	731	420	402	0	0	0
45	Brooklyn	36047 0047	1	225	134	115	0	6	0
46	Brooklyn	36047 0047	2	328	187	224	0	0	0
47	Brooklyn	36047 0049	1	851	162	167	0	0	0
48	Brooklyn	36047 0049	2	649	372	363	0	10	0
49	Brooklyn	36047 0049	3	892	446	466	0	0	0
50	Brooklyn	36047 0051	1	382	189	164	0	0	0
51	Brooklyn	36047 0051	2	833	366	372	0	13	0
52	Brooklyn	36047 0051	3	700	317	298	0	0	0
53	Brooklyn	36047 0055	1	168	74	90	0	0	0
54	Brooklyn	36047 0055	2	19	5	4	0	0	0
55	Brooklyn	36047 0057	1	441	173	146	0	0	0

Summit Metals., Inc.
Jersey City, NJ

NEW YORK PORTION

56	Brooklyn	36047 0057 2	534	220	232	0	0	0
57	Brooklyn	36047 0057 3	475	182	172	0	0	0
58	Brooklyn	36047 0057 4	79	37	46	0	0	0
59	Brooklyn	36047 0059 1	32	21	25	0	0	0
60	Brooklyn	36047 0059 2	540	234	180	0	0	0
61	Brooklyn	36047 0059 3	626	211	226	0	0	0
62	Brooklyn	36047 0063 1	858	429	406	0	0	0
63	Brooklyn	36047 0063 2	841	440	459	0	0	0
64	Brooklyn	36047 0065 1	747	357	348	0	0	0
65	Brooklyn	36047 0065 2	646	336	363	0	5	0
66	Brooklyn	36047 0065 3	748	362	339	0	0	0
67	Brooklyn	36047 0065 4	712	334	324	0	0	0
68	Brooklyn	36047 0065 5	608	319	328	0	0	0
69	Brooklyn	36047 0065 6	873	452	474	0	0	0
70	Brooklyn	36047 0065 7	819	439	347	21	0	0
71	Brooklyn	36047 0067 1	684	327	324	0	0	0
72	Brooklyn	36047 0067 2	501	268	262	0	0	0
73	Brooklyn	36047 0067 3	736	362	356	0	0	0
74	Brooklyn	36047 0067 4	750	369	361	0	0	0
75	Brooklyn	36047 0067 5	614	351	338	0	0	0
76	Brooklyn	36047 0069 1	689	351	310	0	0	0
77	Brooklyn	36047 0069 2	898	378	342	0	0	0
78	Brooklyn	36047 0069 3	804	360	384	0	0	0
79	Brooklyn	36047 0069 4	741	354	347	0	0	0
80	Brooklyn	36047 0071 1	706	344	333	0	0	0
81	Brooklyn	36047 0071 2	758	354	304	0	0	0
82	Brooklyn	36047 0071 3	3850	1157	1191	0	0	0
83	Brooklyn	36047 0075 1	777	374	393	0	0	0
84	Brooklyn	36047 0075 2	938	434	411	0	0	0
85	Brooklyn	36047 0075 3	913	443	417	0	0	0
86	Brooklyn	36047 0075 4	749	371	351	0	0	0
87	Brooklyn	36047 0075 5	586	298	273	0	0	0
88	Brooklyn	36047 0077 1	871	446	452	0	0	0
89	Brooklyn	36047 0077 2	962	450	444	0	0	0
90	Brooklyn	36047 0077 3	981	513	500	0	0	0
91	Brooklyn	36047 0077 4	816	432	451	0	0	0
92	Brooklyn	36047 0085 1	7932	2862	2904	0	0	0
93	Brooklyn	36047 0123 2	0	0	0	0	0	0
94	Brooklyn	36047 0003011	841	544	559	0	0	0
95	Brooklyn	36047 0003012	871	576	525	0	23	0
96	Brooklyn	36047 0301 3	680	290	277	0	0	0
97	Brooklyn	36047 0003014	499	327	323	0	0	0
98	Brooklyn	36047 0003015	2820	426	434	0	0	0
99	Brooklyn	36047 0302 1	997	419	412	0	0	0
100	Brooklyn	36047 0543 1	0	0	0	0	0	0
101	Brooklyn	36047 0029011	458	0	0	0	0	0
102	Brooklyn	36047 0029012	4156	1362	1353	0	0	0
103	Brooklyn	36047 0029021	980	333	334	0	0	8
104	NOT IDENTIFIED	36061 0001 1	6	1	0	0	0	0
105	NOT IDENTIFIED	36061 0001 9	0	0	0	0	0	0
106	Manhattan	36061 0005 9	2813	1023	1023	0	0	0
107	Manhattan	36061 0006 1	2768	724	753	0	0	0
108	Manhattan	36061 0006 2	4781	1565	1584	0	0	0
109	Manhattan	36061 0006 3	2258	839	803	0	0	0
110	Manhattan	36061 0006 4	2189	660	648	0	0	0
111	Manhattan	36061 0007 1	4	2	0	0	0	0
112	Manhattan	36061 0007 2	156	101	103	0	0	0
113	Manhattan	36061 0007 3	42	10	3	0	0	0
114	Manhattan	36061 0008 1	1327	370	364	0	0	0
115	Manhattan	36061 0008 2	3794	1604	1640	0	0	0
116	Manhattan	36061 0008 3	4783	1545	1522	0	0	0

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117	Manhattan	36061	0009	1	431	265	254	0	0	0
118	Manhattan	36061	0009	2	71	29	26	0	0	0
119	Manhattan	36061	0012	1	1052	572	564	0	0	0
120	Manhattan	36061	0012	2	937	493	480	0	6	0
121	Manhattan	36061	0012	3	1522	599	614	0	0	0
122	Manhattan	36061	0013	1	9	0	0	0	0	0
123	Manhattan	36061	0013	2	63	40	47	0	0	0
124	Manhattan	36061	0013	3	59	49	42	0	0	0
125	Manhattan	36061	0013	4	234	2	0	0	0	0
126	Manhattan	36061	0016	1	2251	749	729	0	0	0
127	Manhattan	36061	0016	2	1648	496	461	0	0	0
128	Manhattan	36061	0016	3	1412	420	391	0	0	0
129	Manhattan	36061	0016	4	3398	1035	1119	0	0	0
130	Manhattan	36061	0018	1	1439	444	505	0	0	0
131	Manhattan	36061	0018	2	796	233	231	0	0	0
132	Manhattan	36061	0018	3	1470	506	532	0	0	0
133	Manhattan	36061	0018	4	1539	418	411	0	0	0
134	Manhattan	36061	0018	5	1726	444	396	0	0	0
135	Manhattan	36061	0018	6	870	304	281	0	0	0
136	Manhattan	36061	0018	7	1407	399	392	0	0	0
137	Manhattan	36061	0020	1	6110	1874	1874	0	0	0
138	Manhattan	36061	0021	1	757	376	403	0	0	0
139	Manhattan	36061	0021	2	1074	669	726	0	0	0
140	Manhattan	36061	0024	2	3237	1031	991	0	0	0
141	Manhattan	36061	0024	9	0	0	0	0	0	0
142	Manhattan	36061	0025	1	6005	1879	1958	0	0	0
143	Manhattan	36061	0027	1	1335	662	663	0	0	0
144	Manhattan	36061	0028	1	2146	963	960	0	0	0
145	Manhattan	36061	0028	2	1759	881	874	0	0	0
146	Manhattan	36061	0028	3	2922	1212	1222	0	0	0
147	Manhattan	36061	0029	1	2544	1021	982	0	0	0
148	Manhattan	36061	0029	2	1610	688	726	0	0	0
149	Manhattan	36061	0029	3	1377	593	597	0	0	0
150	Manhattan	36061	0029	4	601	0	0	0	0	0
151	Manhattan	36061	0029	5	926	55	52	0	0	0
152	Manhattan	36061	0031	1	310	88	90	0	0	0
153	Manhattan	36061	0031	2	9	5	0	0	0	0
154	Manhattan	36061	0032	1	1027	576	607	0	0	0
155	Manhattan	36061	0032	2	2106	1255	1215	0	0	0
156	Manhattan	36061	0032	3	2305	1352	1378	0	0	0
157	Manhattan	36061	0032	4	2394	1609	1592	0	0	0
158	Manhattan	36061	0033	1	840	484	481	0	0	0
159	Manhattan	36061	0033	2	490	290	297	0	0	0
160	Manhattan	36061	0033	3	1031	499	462	0	8	0
161	Manhattan	36061	0034	1	1710	920	875	0	0	0
162	Manhattan	36061	0034	2	1474	927	968	0	0	0
163	Manhattan	36061	0034	3	1800	1126	1145	0	0	0
164	Manhattan	36061	0034	4	1328	846	856	0	0	0
165	Manhattan	36061	0038	1	2313	1500	1530	0	0	0
166	Manhattan	36061	0038	2	2568	1737	1701	0	0	0
167	Manhattan	36061	0038	3	2201	1335	1373	0	0	0
168	Manhattan	36061	0038	4	1313	856	819	0	0	5
169	Manhattan	36061	0039	1	1166	614	615	0	0	0
170	Manhattan	36061	0039	2	0	0	0	0	0	0
171	Manhattan	36061	0039	3	460	252	250	0	0	0
172	Manhattan	36061	0039	4	2568	1340	1345	0	0	0
173	Manhattan	36061	0040	1	1541	857	861	0	0	0
174	Manhattan	36061	0040	2	2237	1556	1553	0	0	0
175	Manhattan	36061	0040	3	2822	1437	1424	0	0	0
176	Manhattan	36061	0040	4	1850	1115	1123	0	0	0
177	Manhattan	36061	0041	1	1526	518	515	0	0	0

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178	Manhattan	36061	0041	2	1148	373	383	0	0	0
179	Manhattan	36061	0041	3	1694	663	622	0	0	0
180	Manhattan	36061	0041	4	1833	784	790	0	0	0
181	Manhattan	36061	0041	5	1263	551	565	0	0	0
182	Manhattan	36061	0041	6	1177	487	501	0	0	0
183	Manhattan	36061	0042	1	1453	915	973	0	0	0
184	Manhattan	36061	0042	2	1057	700	752	0	0	0
185	Manhattan	36061	0043	1	1726	884	855	0	0	0
186	Manhattan	36061	0043	2	1367	497	452	0	0	0
187	Manhattan	36061	0043	3	1980	886	850	0	0	0
188	Manhattan	36061	0045	1	792	374	395	0	0	0
189	Manhattan	36061	0045	2	129	64	77	0	0	0
190	Manhattan	36061	0047	1	1077	670	653	0	0	0
191	Manhattan	36061	0047	2	1365	790	766	0	0	0
192	Manhattan	36061	0049	1	1988	1056	1075	0	8	0
193	Manhattan	36061	0049	2	1468	1059	1022	5	0	0
194	Manhattan	36061	0049	3	1457	970	975	0	0	0
195	Manhattan	36061	0050	1	1630	1140	1160	0	0	0
196	Manhattan	36061	0050	2	3825	2795	2775	0	0	0
197	Manhattan	36061	0051	1	1644	1094	1084	0	0	0
198	Manhattan	36061	0051	2	110	49	46	0	0	0
199	Manhattan	36061	0052	1	800	476	467	0	0	0
200	Manhattan	36061	0052	2	2404	1116	1125	0	10	0
201	Manhattan	36061	0053	1	299	180	183	0	0	0
202	Manhattan	36061	0053	2	50	25	25	0	0	0
203	Manhattan	36061	0054	1	406	229	187	0	0	0
204	Manhattan	36061	0054	2	3523	2399	2464	0	0	0
205	Manhattan	36061	0056	1	153	117	107	0	0	0
206	Manhattan	36061	0056	2	2000	1386	1427	0	0	0
207	Manhattan	36061	0057	1	2114	1432	1488	0	0	0
208	Manhattan	36061	0057	2	314	186	193	0	0	0
209	Manhattan	36061	0058	1	326	235	245	0	0	0
210	Manhattan	36061	0058	2	339	234	231	0	0	0
211	Manhattan	36061	0059	1	1821	1295	1274	0	0	0
212	Manhattan	36061	0059	2	2231	1040	1015	0	0	0
213	Manhattan	36061	0059	3	1912	1351	1397	0	0	0
214	Manhattan	36061	0060	1	4195	2490	2490	0	0	0
215	Manhattan	36061	0061	1	2769	1518	1541	0	0	0
216	Manhattan	36061	0061	2	2186	1098	1135	0	0	0
217	Manhattan	36061	0063	1	1672	1136	1086	0	12	0
218	Manhattan	36061	0063	2	1465	1051	1020	0	0	0
219	Manhattan	36061	0063	3	2635	1831	1878	0	0	0
220	Manhattan	36061	0063	4	983	668	690	0	0	0
221	Manhattan	36061	0065	1	2018	711	735	0	0	0
222	Manhattan	36061	0065	2	1124	759	733	0	0	0
223	Manhattan	36061	0065	3	1303	882	906	0	0	0
224	Manhattan	36061	0065	4	631	388	368	0	0	0
225	Manhattan	36061	0065	5	1890	1130	1128	0	0	0
226	Manhattan	36061	0066	3	2328	1698	1684	0	0	0
227	Manhattan	36061	0067	1	1669	1205	1226	0	0	0
228	Manhattan	36061	0067	2	1586	1061	1049	0	0	0
229	Manhattan	36061	0067	3	1022	733	741	0	0	0
230	Manhattan	36061	0067	4	1497	1062	1045	0	0	0
231	Manhattan	36061	0068	1	1804	1405	1415	0	0	0
232	Manhattan	36061	0068	2	1380	998	980	0	0	0
233	Manhattan	36061	0068	3	3019	2220	2180	0	0	17
234	Manhattan	36061	0069	1	586	278	292	0	0	0
235	Manhattan	36061	0069	2	1713	883	900	0	0	0
236	Manhattan	36061	0071	1	2479	1570	1612	0	10	0
237	Manhattan	36061	0071	2	978	448	436	0	0	0
238	Manhattan	36061	0071	3	1271	863	894	0	0	0

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239	Manhattan	36061	0071	4	1513	1019	948	0	0	0
240	Manhattan	36061	0073	1	1330	919	922	0	0	0
241	Manhattan	36061	0073	2	1548	1059	1092	0	0	0
242	Manhattan	36061	0073	3	747	549	559	0	0	0
243	Manhattan	36061	0073	4	1663	1276	1226	0	0	0
244	Manhattan	36061	0073	5	1464	1066	1070	0	0	0
245	Manhattan	36061	0074	2	1155	1105	1030	0	0	0
246	Manhattan	36061	0075	1	1028	661	629	0	0	0
247	Manhattan	36061	0075	2	3111	1879	1842	0	0	0
248	Manhattan	36061	0076	1	728	613	636	0	0	0
249	Manhattan	36061	0076	2	1031	730	776	0	0	0
250	Manhattan	36061	0077	1	1133	888	898	0	0	0
251	Manhattan	36061	0077	2	2536	1678	1695	0	0	0
252	Manhattan	36061	0077	3	1471	1053	1051	0	0	0
253	Manhattan	36061	0077	4	1203	864	839	0	0	0
254	Manhattan	36061	0079	1	1282	786	762	0	0	0
255	Manhattan	36061	0079	2	1327	980	999	0	0	0
256	Manhattan	36061	0079	3	1800	1057	1062	0	0	0
257	Manhattan	36061	0081	1	1291	873	884	0	0	0
258	Manhattan	36061	0081	2	2085	1306	1223	0	0	0
259	Manhattan	36061	0081	3	2818	1764	1764	0	0	0
260	Manhattan	36061	0081	4	1376	954	1026	0	0	0
261	Manhattan	36061	0083	1	995	578	622	0	0	0
262	Manhattan	36061	0083	2	992	727	713	0	0	0
263	Manhattan	36061	0083	3	1604	649	607	0	0	0
264	Manhattan	36061	0087	1	776	520	476	0	0	0
265	Manhattan	36061	0087	2	1920	1259	1321	0	0	0
266	Manhattan	36061	0087	3	2317	1565	1547	0	0	0
267	Manhattan	36061	0089	1	1934	1233	1264	0	0	0
268	Manhattan	36061	0089	2	1317	918	904	0	0	0
269	Manhattan	36061	0089	3	1509	785	801	0	0	0
270	Manhattan	36061	0089	4	851	560	527	0	0	0
271	Manhattan	36061	0091	1	1564	950	910	0	0	0
272	Manhattan	36061	0091	2	2139	1424	1405	0	0	0
273	Manhattan	36061	0091	3	748	544	606	0	0	0
274	Manhattan	36061	0093	1	1609	1139	1137	0	0	0
275	Manhattan	36061	0093	2	1699	1009	964	0	0	0
276	Manhattan	36061	0093	3	2845	2207	2153	0	0	0
277	Manhattan	36061	0093	4	2767	1271	1372	0	0	0
278	Manhattan	36061	0095	1	791	457	431	0	0	0
279	Manhattan	36061	0095	2	1887	338	346	0	0	0
280	Manhattan	36061	0097	1	3777	2467	2439	0	0	0
281	Manhattan	36061	0097	2	1032	401	452	0	0	0
282	Manhattan	36061	0099	1	306	164	166	0	0	0
283	Manhattan	36061	0099	2	399	86	87	0	0	0
284	Manhattan	36061	0101	1	403	41	43	0	0	0
285	Manhattan	36061	0101	2	830	60	62	0	0	0
286	Manhattan	36061	0103	1	882	460	461	0	0	0
287	Manhattan	36061	0103	2	585	422	423	0	0	0
288	Manhattan	36061	0109	2	136	66	62	0	0	0
289	Manhattan	36061	0111	1	923	427	434	0	0	0
290	Manhattan	36061	0111	2	876	515	548	0	0	0
291	Manhattan	36061	0111	3	429	247	245	0	0	0
292	Manhattan	36061	000201	1	987	273	246	0	0	0
293	Manhattan	36061	000201	2	2394	743	771	0	0	0
294	Manhattan	36061	0202	1	238	107	93	0	0	0
295	Manhattan	36061	000202	2	0	0	0	0	0	0
296	Manhattan	36061	000202	3	5013	2085	2162	0	0	0
297	Manhattan	36061	000202	4	1710	815	759	0	0	0
298	Manhattan	36061	0202	9	0	0	0	0	0	0
299	Manhattan	36061	0319	9	111	7	6	0	0	0

300	Manhattan	36061	0005999	257	0	0	0	0	0
301	Manhattan	36061	0010011	1947	975	975	0	0	0
302	Manhattan	36061	0010021	7621	2442	2456	0	0	0
303	Manhattan	36061	0014011	3130	1733	1733	0	0	0
304	Manhattan	36061	0014021	319	132	145	0	0	0
305	Manhattan	36061	0014022	1114	416	381	0	0	0
306	Manhattan	36061	0014023	336	210	209	0	0	0
307	Manhattan	36061	0014024	1188	491	516	0	0	0
308	Manhattan	36061	0015011	3388	2043	2039	0	0	0
309	Manhattan	36061	0015012	774	196	183	0	0	0
310	Manhattan	36061	0015021	209	130	135	0	0	0
311	Manhattan	36061	0015022	937	525	537	0	0	0
312	Manhattan	36061	0022011	4314	1594	1562	0	0	0
313	Manhattan	36061	0022012	1094	479	452	0	0	0
314	Manhattan	36061	0022013	1251	488	485	0	0	0
315	Manhattan	36061	0022021	1224	565	543	0	0	0
316	Manhattan	36061	0026011	1256	524	565	0	0	0
317	Manhattan	36061	0026012	1530	569	517	0	0	0
318	Manhattan	36061	0026021	1186	630	563	0	0	0
319	Manhattan	36061	0026022	1539	851	928	0	0	0
320	Manhattan	36061	0030011	885	434	445	0	0	0
321	Manhattan	36061	0030012	835	407	410	0	0	0
322	Manhattan	36061	0030013	1354	468	461	0	0	0
323	Manhattan	36061	0030014	933	378	346	0	0	0
324	Manhattan	36061	0030021	1616	943	1010	0	0	0
325	Manhattan	36061	0030022	1165	764	725	0	0	0
326	Manhattan	36061	0036011	1098	395	407	0	0	0
327	Manhattan	36061	0036012	1068	359	347	0	0	0
328	Manhattan	36061	0036013	1586	368	376	0	0	0
329	Manhattan	36061	0036021	1650	967	969	0	0	0
330	Manhattan	36061	0036022	808	187	177	0	0	0
331	Manhattan	36061	0044013	15233	8774	8774	0	0	0
332	Manhattan	36061	0048971	1651	813	793	0	0	0
333	Manhattan	36061	0048972	1362	923	934	0	0	0
334	Manhattan	36061	0048973	1910	1303	1352	0	0	0
335	Manhattan	36061	0048974	2011	1343	1344	0	0	0
336	Manhattan	36061	0048975	0	0	0	0	0	0
337	Manhattan	36061	0055011	1434	914	946	0	0	0
338	Manhattan	36061	0055012	3101	1835	1733	0	0	0
339	Manhattan	36061	0055021	1547	761	735	0	0	0
340	Manhattan	36061	0055022	565	256	228	0	0	0
341	Manhattan	36061	0064971	2479	1499	1441	0	0	0
342	Manhattan	36061	0064972	1267	863	856	0	0	0
343	Manhattan	36061	0064973	359	281	290	0	0	0
344	Manhattan	36061	0064974	2947	2058	2100	0	0	0
345	Manhattan	36061	0064984	691	494	508	0	0	0
346	Manhattan	36061	0317019	5574	4032	4056	0	0	0
347	Manhattan	36061	0317021	340	0	0	0	0	0
	Totals:			478219	246208	245933	26	158	30

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City	Census Tract ID		Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Wells
Brooklyn	36047 0001	1	1305	780	779	0	0	0
Brooklyn	36047 0001	2	2010	1378	1419	0	0	0
Brooklyn	36047 0001	3	139	77	61	0	0	0
Brooklyn	36047 0005	1	1424	949	933	0	9	0
Brooklyn	36047 0005	2	1064	795	847	0	0	0
Brooklyn	36047 0005	3	1078	535	488	0	6	0
Brooklyn	36047 0005	4	961	638	609	0	0	0
Brooklyn	36047 0005	5	1468	1054	1079	0	0	0
Brooklyn	36047 0007	1	1147	681	696	0	0	0
Brooklyn	36047 0007	2	706	469	460	0	0	0
Brooklyn	36047 0007	3	847	474	461	0	0	0
Brooklyn	36047 0009	1	1135	760	745	0	0	0
Brooklyn	36047 0009	2	683	385	392	0	0	0
Brooklyn	36047 0011	1	70	18	16	0	0	0
Brooklyn	36047 0013	1	1585	1049	1064	0	0	0
Brooklyn	36047 0013	3	78	31	33	0	0	0
Brooklyn	36047 0018	1	4	3	3	0	0	0
Brooklyn	36047 0021	1	256	119	114	0	0	0
Brooklyn	36047 0021	2	119	44	59	0	0	0
Brooklyn	36047 0021	3	28	5	0	0	0	0
Brooklyn	36047 0021	4	16	10	16	0	0	0
Brooklyn	36047 0023	1	5106	1523	1569	0	0	0
Brooklyn	36047 0025	1	1344	407	407	0	0	0
Brooklyn	36047 0025	2	252	120	74	0	0	0
Brooklyn	36047 0027	1	326	95	99	0	0	0
Brooklyn	36047 0027	2	249	106	102	0	0	0
Brooklyn	36047 0031	2	699	104	117	0	0	0
Brooklyn	36047 0031	3	2189	862	867	0	0	0
Brooklyn	36047 0032	1	2	1	0	0	0	0
Brooklyn	36047 0033	2	1010	479	464	0	6	0
Brooklyn	36047 0037	1	168	88	83	0	0	0
Brooklyn	36047 0037	2	100	52	62	0	0	0
Brooklyn	36047 0041	1	882	434	483	0	0	0
Brooklyn	36047 0041	2	1090	452	375	0	0	0
Brooklyn	36047 0041	3	888	452	347	0	0	0
Brooklyn	36047 0041	4	455	281	343	0	0	0
Brooklyn	36047 0043	1	713	15	13	0	0	0
Brooklyn	36047 0043	2	588	314	348	0	17	0
Brooklyn	36047 0043	3	748	447	444	0	0	0
Brooklyn	36047 0043	4	690	334	382	0	0	0
Brooklyn	36047 0045	1	1073	572	584	0	0	0
Brooklyn	36047 0045	2	752	393	377	0	9	0
Brooklyn	36047 0045	3	714	393	405	0	0	0
Brooklyn	36047 0045	4	731	420	402	0	0	0
Brooklyn	36047 0047	1	225	134	115	0	6	0
Brooklyn	36047 0047	2	328	187	224	0	0	0
Brooklyn	36047 0049	1	851	162	167	0	0	0
Brooklyn	36047 0049	2	649	372	363	0	10	0
Brooklyn	36047 0049	3	892	446	466	0	0	0
Brooklyn	36047 0051	1	382	189	164	0	0	0
Brooklyn	36047 0051	2	833	366	372	0	13	0
Brooklyn	36047 0051	3	700	317	298	0	0	0
Brooklyn	36047 0055	1	168	74	90	0	0	0
Brooklyn	36047 0055	2	19	5	4	0	0	0
Brooklyn	36047 0057	1	441	173	146	0	0	0
Brooklyn	36047 0057	2	534	220	232	0	0	0

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Brooklyn	36047 0057	3	475	182	172	0	0	0
Brooklyn	36047 0057	4	79	37	46	0	0	0
Brooklyn	36047 0059	1	32	21	25	0	0	0
Brooklyn	36047 0059	2	540	234	180	0	0	0
Brooklyn	36047 0059	3	626	211	226	0	0	0
Brooklyn	36047 0063	1	858	429	406	0	0	0
Brooklyn	36047 0063	2	841	440	459	0	0	0
Brooklyn	36047 0065	1	747	357	348	0	0	0
Brooklyn	36047 0065	2	646	336	363	0	5	0
Brooklyn	36047 0065	3	748	362	339	0	0	0
Brooklyn	36047 0065	4	712	334	324	0	0	0
Brooklyn	36047 0065	5	608	319	328	0	0	0
Brooklyn	36047 0065	6	873	452	474	0	0	0
Brooklyn	36047 0065	7	819	439	347	21	0	0
Brooklyn	36047 0067	1	684	327	324	0	0	0
Brooklyn	36047 0067	2	501	268	262	0	0	0
Brooklyn	36047 0067	3	736	362	356	0	0	0
Brooklyn	36047 0067	4	750	369	361	0	0	0
Brooklyn	36047 0067	5	614	351	338	0	0	0
Brooklyn	36047 0069	1	689	351	310	0	0	0
Brooklyn	36047 0069	2	898	378	342	0	0	0
Brooklyn	36047 0069	3	804	360	384	0	0	0
Brooklyn	36047 0069	4	741	354	347	0	0	0
Brooklyn	36047 0071	1	706	344	333	0	0	0
Brooklyn	36047 0071	2	758	354	304	0	0	0
Brooklyn	36047 0071	3	3850	1157	1191	0	0	0
Brooklyn	36047 0075	1	777	374	393	0	0	0
Brooklyn	36047 0075	2	938	434	411	0	0	0
Brooklyn	36047 0075	3	913	443	417	0	0	0
Brooklyn	36047 0075	4	749	371	351	0	0	0
Brooklyn	36047 0075	5	586	298	273	0	0	0
Brooklyn	36047 0077	1	871	446	452	0	0	0
Brooklyn	36047 0077	2	962	450	444	0	0	0
Brooklyn	36047 0077	3	981	513	500	0	0	0
Brooklyn	36047 0077	4	816	432	451	0	0	0
Brooklyn	36047 0085	1	7932	2862	2904	0	0	0
Brooklyn	36047 0123	2	0	0	0	0	0	0
Brooklyn	36047 0003011		841	544	559	0	0	0
Brooklyn	36047 0003012		871	576	525	0	23	0
Brooklyn	36047 0301	3	680	290	277	0	0	0
Brooklyn	36047 0003014		499	327	323	0	0	0
Brooklyn	36047 0003015		2820	426	434	0	0	0
Brooklyn	36047 0302	1	997	419	412	0	0	0
Brooklyn	36047 0543	1	0	0	0	0	0	0
Brooklyn	36047 0029011		458	0	0	0	0	0
Brooklyn	36047 0029012		4156	1362	1353	0	0	0
Brooklyn	36047 0029021		980	333	334	0	0	8
	Sub Totals:		91076	41271	40964	21	104	8
Manhattan	36061 0093	4	2767	1271	1372	0	0	0
Manhattan	36061 0095	1	791	457	431	0	0	0
Manhattan	36061 0005	9	2813	1023	1023	0	0	0
Manhattan	36061 0006	1	2768	724	753	0	0	0
Manhattan	36061 0006	2	4781	1565	1584	0	0	0
Manhattan	36061 0006	3	2258	839	803	0	0	0
Manhattan	36061 0006	4	2189	660	648	0	0	0
Manhattan	36061 0007	1	4	2	0	0	0	0
Manhattan	36061 0007	2	156	101	103	0	0	0
Manhattan	36061 0007	3	42	10	3	0	0	0
Manhattan	36061 0008	1	1327	370	364	0	0	0

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Manhattan	36061	0008	2	3794	1604	1640	0	0	0
Manhattan	36061	0008	3	4783	1545	1522	0	0	0
Manhattan	36061	0009	1	431	265	254	0	0	0
Manhattan	36061	0009	2	71	29	26	0	0	0
Manhattan	36061	0012	1	1052	572	564	0	0	0
Manhattan	36061	0012	2	937	493	480	0	6	0
Manhattan	36061	0012	3	1522	599	614	0	0	0
Manhattan	36061	0013	1	9	0	0	0	0	0
Manhattan	36061	0013	2	63	40	47	0	0	0
Manhattan	36061	0013	3	59	49	42	0	0	0
Manhattan	36061	0013	4	234	2	0	0	0	0
Manhattan	36061	0016	1	2251	749	729	0	0	0
Manhattan	36061	0016	2	1648	496	461	0	0	0
Manhattan	36061	0016	3	1412	420	391	0	0	0
Manhattan	36061	0016	4	3398	1035	1119	0	0	0
Manhattan	36061	0018	1	1439	444	505	0	0	0
Manhattan	36061	0018	2	796	233	231	0	0	0
Manhattan	36061	0018	3	1470	506	532	0	0	0
Manhattan	36061	0018	4	1539	418	411	0	0	0
Manhattan	36061	0018	5	1726	444	396	0	0	0
Manhattan	36061	0018	6	870	304	281	0	0	0
Manhattan	36061	0018	7	1407	399	392	0	0	0
Manhattan	36061	0020	1	6110	1874	1874	0	0	0
Manhattan	36061	0021	1	757	376	403	0	0	0
Manhattan	36061	0021	2	1074	669	726	0	0	0
Manhattan	36061	0024	2	3237	1031	991	0	0	0
Manhattan	36061	0024	9	0	0	0	0	0	0
Manhattan	36061	0025	1	6005	1879	1958	0	0	0
Manhattan	36061	0027	1	1335	662	663	0	0	0
Manhattan	36061	0028	1	2146	963	960	0	0	0
Manhattan	36061	0028	2	1759	881	874	0	0	0
Manhattan	36061	0028	3	2922	1212	1222	0	0	0
Manhattan	36061	0029	1	2544	1021	982	0	0	0
Manhattan	36061	0029	2	1610	688	726	0	0	0
Manhattan	36061	0029	3	1377	593	597	0	0	0
Manhattan	36061	0029	4	601	0	0	0	0	0
Manhattan	36061	0029	5	926	55	52	0	0	0
Manhattan	36061	0031	1	310	88	90	0	0	0
Manhattan	36061	0031	2	9	5	0	0	0	0
Manhattan	36061	0032	1	1027	576	607	0	0	0
Manhattan	36061	0032	2	2106	1255	1215	0	0	0
Manhattan	36061	0032	3	2305	1352	1378	0	0	0
Manhattan	36061	0032	4	2394	1609	1592	0	0	0
Manhattan	36061	0033	1	840	484	481	0	0	0
Manhattan	36061	0033	2	490	290	297	0	0	0
Manhattan	36061	0033	3	1031	499	462	0	8	0
Manhattan	36061	0034	1	1710	920	875	0	0	0
Manhattan	36061	0034	2	1474	927	968	0	0	0
Manhattan	36061	0034	3	1800	1126	1145	0	0	0
Manhattan	36061	0034	4	1328	846	856	0	0	0
Manhattan	36061	0038	1	2313	1500	1530	0	0	0
Manhattan	36061	0038	2	2568	1737	1701	0	0	0
Manhattan	36061	0038	3	2201	1335	1373	0	0	0
Manhattan	36061	0038	4	1313	856	819	0	0	5
Manhattan	36061	0039	1	1166	614	615	0	0	0
Manhattan	36061	0039	2	0	0	0	0	0	0
Manhattan	36061	0039	3	460	252	250	0	0	0
Manhattan	36061	0039	4	2568	1340	1345	0	0	0
Manhattan	36061	0040	1	1541	857	861	0	0	0
Manhattan	36061	0040	2	2237	1556	1553	0	0	0
Manhattan	36061	0040	3	2822	1437	1424	0	0	0

Manhattan	36061	0040	4	1850	1115	1123	0	0	0
Manhattan	36061	0041	1	1526	518	515	0	0	0
Manhattan	36061	0041	2	1148	373	383	0	0	0
Manhattan	36061	0041	3	1694	663	622	0	0	0
Manhattan	36061	0041	4	1833	784	790	0	0	0
Manhattan	36061	0041	5	1263	551	565	0	0	0
Manhattan	36061	0041	6	1177	487	501	0	0	0
Manhattan	36061	0042	1	1453	915	973	0	0	0
Manhattan	36061	0042	2	1057	700	752	0	0	0
Manhattan	36061	0043	1	1726	884	855	0	0	0
Manhattan	36061	0043	2	1367	497	452	0	0	0
Manhattan	36061	0043	3	1980	886	850	0	0	0
Manhattan	36061	0045	1	792	374	395	0	0	0
Manhattan	36061	0045	2	129	64	77	0	0	0
Manhattan	36061	0047	1	1077	670	653	0	0	0
Manhattan	36061	0047	2	1365	790	766	0	0	0
Manhattan	36061	0049	1	1988	1056	1075	0	8	0
Manhattan	36061	0049	2	1468	1059	1022	5	0	0
Manhattan	36061	0049	3	1457	970	975	0	0	0
Manhattan	36061	0050	1	1630	1140	1160	0	0	0
Manhattan	36061	0050	2	3825	2795	2775	0	0	0
Manhattan	36061	0051	1	1644	1094	1084	0	0	0
Manhattan	36061	0051	2	110	49	46	0	0	0
Manhattan	36061	0052	1	800	476	467	0	0	0
Manhattan	36061	0052	2	2404	1116	1125	0	10	0
Manhattan	36061	0053	1	299	180	183	0	0	0
Manhattan	36061	0053	2	50	25	25	0	0	0
Manhattan	36061	0054	1	406	229	187	0	0	0
Manhattan	36061	0054	2	3523	2399	2464	0	0	0
Manhattan	36061	0056	1	153	117	107	0	0	0
Manhattan	36061	0056	2	2000	1386	1427	0	0	0
Manhattan	36061	0057	1	2114	1432	1488	0	0	0
Manhattan	36061	0057	2	314	186	193	0	0	0
Manhattan	36061	0058	1	326	235	245	0	0	0
Manhattan	36061	0058	2	339	234	231	0	0	0
Manhattan	36061	0059	1	1821	1295	1274	0	0	0
Manhattan	36061	0059	2	2231	1040	1015	0	0	0
Manhattan	36061	0059	3	1912	1351	1397	0	0	0
Manhattan	36061	0060	1	4195	2490	2490	0	0	0
Manhattan	36061	0061	1	2769	1518	1541	0	0	0
Manhattan	36061	0061	2	2186	1098	1135	0	0	0
Manhattan	36061	0063	1	1672	1136	1086	0	12	0
Manhattan	36061	0063	2	1465	1051	1020	0	0	0
Manhattan	36061	0063	3	2635	1831	1878	0	0	0
Manhattan	36061	0063	4	983	668	690	0	0	0
Manhattan	36061	0065	1	2018	711	735	0	0	0
Manhattan	36061	0065	2	1124	759	733	0	0	0
Manhattan	36061	0065	3	1303	882	906	0	0	0
Manhattan	36061	0065	4	631	388	368	0	0	0
Manhattan	36061	0065	5	1890	1130	1128	0	0	0
Manhattan	36061	0066	3	2328	1698	1684	0	0	0
Manhattan	36061	0067	1	1669	1205	1226	0	0	0
Manhattan	36061	0067	2	1586	1061	1049	0	0	0
Manhattan	36061	0067	3	1022	733	741	0	0	0
Manhattan	36061	0067	4	1497	1062	1045	0	0	0
Manhattan	36061	0068	1	1804	1405	1415	0	0	0
Manhattan	36061	0068	2	1380	998	980	0	0	0
Manhattan	36061	0068	3	3019	2220	2180	0	0	17
Manhattan	36061	0069	1	586	278	292	0	0	0
Manhattan	36061	0069	2	1713	883	900	0	0	0
Manhattan	36061	0071	1	2479	1570	1612	0	10	0

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Manhattan	36061 0071 2	978	448	436	0	0	0
Manhattan	36061 0071 3	1271	863	894	0	0	0
Manhattan	36061 0071 4	1513	1019	948	0	0	0
Manhattan	36061 0073 1	1330	919	922	0	0	0
Manhattan	36061 0073 2	1548	1059	1092	0	0	0
Manhattan	36061 0073 3	747	549	559	0	0	0
Manhattan	36061 0073 4	1663	1276	1226	0	0	0
Manhattan	36061 0073 5	1464	1066	1070	0	0	0
Manhattan	36061 0074 2	1155	1105	1030	0	0	0
Manhattan	36061 0075 1	1028	661	629	0	0	0
Manhattan	36061 0075 2	3111	1879	1842	0	0	0
Manhattan	36061 0076 1	728	613	636	0	0	0
Manhattan	36061 0076 2	1031	730	776	0	0	0
Manhattan	36061 0077 1	1133	888	898	0	0	0
Manhattan	36061 0077 2	2536	1678	1695	0	0	0
Manhattan	36061 0077 3	1471	1053	1051	0	0	0
Manhattan	36061 0077 4	1203	864	839	0	0	0
Manhattan	36061 0079 1	1282	786	762	0	0	0
Manhattan	36061 0079 2	1327	980	999	0	0	0
Manhattan	36061 0079 3	1800	1057	1062	0	0	0
Manhattan	36061 0081 1	1291	873	884	0	0	0
Manhattan	36061 0081 2	2085	1306	1223	0	0	0
Manhattan	36061 0081 3	2818	1764	1764	0	0	0
Manhattan	36061 0081 4	1376	954	1026	0	0	0
Manhattan	36061 0083 1	995	578	622	0	0	0
Manhattan	36061 0083 2	992	727	713	0	0	0
Manhattan	36061 0083 3	1604	649	607	0	0	0
Manhattan	36061 0087 1	776	520	476	0	0	0
Manhattan	36061 0087 2	1920	1259	1321	0	0	0
Manhattan	36061 0087 3	2317	1565	1547	0	0	0
Manhattan	36061 0089 1	1934	1233	1264	0	0	0
Manhattan	36061 0089 2	1317	918	904	0	0	0
Manhattan	36061 0089 3	1509	785	801	0	0	0
Manhattan	36061 0089 4	851	560	527	0	0	0
Manhattan	36061 0091 1	1564	950	910	0	0	0
Manhattan	36061 0091 2	2139	1424	1405	0	0	0
Manhattan	36061 0091 3	748	544	606	0	0	0
Manhattan	36061 0093 1	1609	1139	1137	0	0	0
Manhattan	36061 0093 2	1699	1009	964	0	0	0
Manhattan	36061 0093 3	2845	2207	2153	0	0	0
Manhattan	36061 0030011	885	434	445	0	0	0
Manhattan	36061 0030012	835	407	410	0	0	0
Manhattan	36061 0095 2	1887	338	346	0	0	0
Manhattan	36061 0097 1	3777	2467	2439	0	0	0
Manhattan	36061 0097 2	1032	401	452	0	0	0
Manhattan	36061 0099 1	306	164	166	0	0	0
Manhattan	36061 0099 2	399	86	87	0	0	0
Manhattan	36061 0101 1	403	41	43	0	0	0
Manhattan	36061 0101 2	830	60	62	0	0	0
Manhattan	36061 0103 1	882	460	461	0	0	0
Manhattan	36061 0103 2	585	422	423	0	0	0
Manhattan	36061 0109 2	136	66	62	0	0	0
Manhattan	36061 0111 1	923	427	434	0	0	0
Manhattan	36061 0111 2	876	515	548	0	0	0
Manhattan	36061 0111 3	429	247	245	0	0	0
Manhattan	36061 0002011	987	273	246	0	0	0
Manhattan	36061 0002012	2394	743	771	0	0	0
Manhattan	36061 0202 1	238	107	93	0	0	0
Manhattan	36061 0002022	0	0	0	0	0	0
Manhattan	36061 0002023	5013	2085	2162	0	0	0
Manhattan	36061 0002024	1710	815	759	0	0	0

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Manhattan	36061	0202 9	0	0	0	0	0	0
Manhattan	36061	0319 9	111	7	6	0	0	0
Manhattan	36061	0005999	257	0	0	0	0	0
Manhattan	36061	0010011	1947	975	975	0	0	0
Manhattan	36061	0010021	7621	2442	2456	0	0	0
Manhattan	36061	0014011	3130	1733	1733	0	0	0
Manhattan	36061	0014021	319	132	145	0	0	0
Manhattan	36061	0014022	1114	416	381	0	0	0
Manhattan	36061	0014023	336	210	209	0	0	0
Manhattan	36061	0014024	1188	491	516	0	0	0
Manhattan	36061	0015011	3388	2043	2039	0	0	0
Manhattan	36061	0015012	774	196	183	0	0	0
Manhattan	36061	0015021	209	130	135	0	0	0
Manhattan	36061	0015022	937	525	537	0	0	0
Manhattan	36061	0022011	4314	1594	1562	0	0	0
Manhattan	36061	0022012	1094	479	452	0	0	0
Manhattan	36061	0022013	1251	488	485	0	0	0
Manhattan	36061	0022021	1224	565	543	0	0	0
Manhattan	36061	0026011	1256	524	565	0	0	0
Manhattan	36061	0026012	1530	569	517	0	0	0
Manhattan	36061	0026021	1186	630	563	0	0	0
Manhattan	36061	0026022	1539	851	928	0	0	0
Manhattan	36061	0064971	2479	1499	1441	0	0	0
Manhattan	36061	0064972	1267	863	856	0	0	0
Manhattan	36061	0030013	1354	468	461	0	0	0
Manhattan	36061	0030014	933	378	346	0	0	0
Manhattan	36061	0030021	1616	943	1010	0	0	0
Manhattan	36061	0030022	1165	764	725	0	0	0
Manhattan	36061	0036011	1098	395	407	0	0	0
Manhattan	36061	0036012	1068	359	347	0	0	0
Manhattan	36061	0036013	1586	368	376	0	0	0
Manhattan	36061	0036021	1650	967	969	0	0	0
Manhattan	36061	0036022	808	187	177	0	0	0
Manhattan	36061	0044013	15233	8774	8774	0	0	0
Manhattan	36061	0048971	1651	813	793	0	0	0
Manhattan	36061	0048972	1362	923	934	0	0	0
Manhattan	36061	0048973	1910	1303	1352	0	0	0
Manhattan	36061	0048974	2011	1343	1344	0	0	0
Manhattan	36061	0048975	0	0	0	0	0	0
Manhattan	36061	0055011	1434	914	946	0	0	0
Manhattan	36061	0055012	3101	1835	1733	0	0	0
Manhattan	36061	0055021	1547	761	735	0	0	0
Manhattan	36061	0055022	565	256	228	0	0	0
Manhattan	36061	0317019	5574	4032	4056	0	0	0
Manhattan	36061	0317021	340	0	0	0	0	0
Manhattan	36061	0064973	359	281	290	0	0	0
Manhattan	36061	0064974	2947	2058	2100	0	0	0
Manhattan	36061	0064984	691	494	508	0	0	0
	Sub Totals:		387137	204936	204969	5	54	22
NOT IDENTIFIED	36061	0001 1	6	1	0	0	0	0
NOT IDENTIFIED	36061	0001 9	0	0	0	0	0	0
	Sub Totals:		6	1	0	0	0	0

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Summit Metals., Inc.
Jersey City, NJ

NEW YORK PORTION

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Brooklyn	36047 11	0.025088	0.025088	100.00
2	Brooklyn	36047 12	0.020297	0.020297	100.00
3	Brooklyn	36047 13	0.010969	0.010969	100.00
4	Brooklyn	36047 51	0.020327	0.020327	100.00
5	Brooklyn	36047 52	0.016383	0.016383	100.00
6	Brooklyn	36047 53	0.010638	0.010638	100.00
7	Brooklyn	36047 54	0.006732	0.006732	100.00
8	Brooklyn	36047 55	0.013596	0.013596	100.00
9	Brooklyn	36047 71	0.019573	0.019573	100.00
10	Brooklyn	36047 72	0.018632	0.018632	100.00
11	Brooklyn	36047 73	0.015691	0.015691	100.00
12	Brooklyn	36047 91	0.039643	0.039643	100.00
13	Brooklyn	36047 92	0.020052	0.020052	100.00
14	Brooklyn	36047 111	0.059960	0.059960	100.00
15	Brooklyn	36047 131	0.071569	0.071569	100.00
16	Brooklyn	36047 133	0.040435	0.040435	100.00
17	Brooklyn	36047 181	2.525762	0.605732	23.98
18	Brooklyn	36047 211	0.057092	0.057092	100.00
19	Brooklyn	36047 212	0.051052	0.051052	100.00
20	Brooklyn	36047 213	0.023460	0.023460	100.00
21	Brooklyn	36047 214	0.053484	0.053484	100.00
22	Brooklyn	36047 231	0.068670	0.068670	100.00
23	Brooklyn	36047 251	0.033166	0.033166	100.00
24	Brooklyn	36047 252	0.031378	0.031378	100.00
25	Brooklyn	36047 271	0.019344	0.019344	100.00
26	Brooklyn	36047 272	0.033026	0.033026	100.00
27	Brooklyn	36047 312	0.021208	0.009059	42.71
28	Brooklyn	36047 313	0.026658	0.016360	61.37
29	Brooklyn	36047 321	2.548664	0.000088	0.00
30	Brooklyn	36047 332	0.044008	0.004605	10.46
31	Brooklyn	36047 371	0.038055	0.025268	66.40
32	Brooklyn	36047 372	0.025636	0.025636	100.00
33	Brooklyn	36047 411	0.018228	0.013105	71.89
34	Brooklyn	36047 412	0.011981	0.008345	69.65
35	Brooklyn	36047 413	0.018563	0.018563	100.00
36	Brooklyn	36047 414	0.011616	0.011616	100.00
37	Brooklyn	36047 431	0.014460	0.014460	100.00
38	Brooklyn	36047 432	0.015938	0.015938	100.00
39	Brooklyn	36047 433	0.020083	0.020083	100.00
40	Brooklyn	36047 434	0.011880	0.011880	100.00
41	Brooklyn	36047 451	0.020133	0.020133	100.00
42	Brooklyn	36047 452	0.016185	0.016185	100.00
43	Brooklyn	36047 453	0.012074	0.012074	100.00
44	Brooklyn	36047 454	0.014770	0.014770	100.00
45	Brooklyn	36047 471	0.027369	0.027369	100.00
46	Brooklyn	36047 472	0.030259	0.030259	100.00
47	Brooklyn	36047 491	0.016301	0.016301	100.00
48	Brooklyn	36047 492	0.008385	0.008385	100.00
49	Brooklyn	36047 493	0.012708	0.012708	100.00
50	Brooklyn	36047 511	0.020202	0.020202	100.00
51	Brooklyn	36047 512	0.019680	0.019680	100.00
52	Brooklyn	36047 513	0.025663	0.025663	100.00
53	Brooklyn	36047 551	2.564957	2.535970	98.87

54	Brooklyn	36047 552	0.057218	0.057218	100.00
55	Brooklyn	36047 571	0.027732	0.027732	100.00
56	Brooklyn	36047 572	0.042158	0.042158	100.00
57	Brooklyn	36047 573	0.032240	0.032240	100.00
58	Brooklyn	36047 574	0.027420	0.027420	100.00
59	Brooklyn	36047 591	0.047171	0.047171	100.00
60	Brooklyn	36047 592	0.043973	0.043973	100.00
61	Brooklyn	36047 593	0.040317	0.040317	100.00
62	Brooklyn	36047 631	0.012851	0.012851	100.00
63	Brooklyn	36047 632	0.029255	0.029255	100.00
64	Brooklyn	36047 651	0.010152	0.010152	100.00
65	Brooklyn	36047 652	0.011489	0.011489	100.00
66	Brooklyn	36047 653	0.013162	0.013162	100.00
67	Brooklyn	36047 654	0.012969	0.012969	100.00
68	Brooklyn	36047 655	0.012373	0.012373	100.00
69	Brooklyn	36047 656	0.015309	0.015309	100.00
70	Brooklyn	36047 657	0.019294	0.019294	100.00
71	Brooklyn	36047 671	0.013895	0.013895	100.00
72	Brooklyn	36047 672	0.010432	0.010432	100.00
73	Brooklyn	36047 673	0.009890	0.009890	100.00
74	Brooklyn	36047 674	0.010370	0.010370	100.00
75	Brooklyn	36047 675	0.013492	0.013492	100.00
76	Brooklyn	36047 691	0.011616	0.011616	100.00
77	Brooklyn	36047 692	0.018209	0.018209	100.00
78	Brooklyn	36047 693	0.021053	0.021053	100.00
79	Brooklyn	36047 694	0.015630	0.015630	100.00
80	Brooklyn	36047 711	0.012793	0.010807	84.48
81	Brooklyn	36047 712	0.027390	0.014057	51.32
82	Brooklyn	36047 713	0.024256	0.024256	100.00
83	Brooklyn	36047 751	0.021470	0.021448	99.90
84	Brooklyn	36047 752	0.021693	0.021416	98.72
85	Brooklyn	36047 753	0.033785	0.030874	91.38
86	Brooklyn	36047 754	0.014851	0.014851	100.00
87	Brooklyn	36047 755	0.015426	0.015426	100.00
88	Brooklyn	36047 771	0.023468	0.018275	77.87
89	Brooklyn	36047 772	0.034441	0.025701	74.62
90	Brooklyn	36047 773	0.068125	0.068125	100.00
91	Brooklyn	36047 774	0.020771	0.020771	100.00
92	Brooklyn	36047 851	0.093312	0.093312	100.00
93	Brooklyn	36047 1232	0.094965	0.027770	29.24
94	Brooklyn	36047 3011	0.009435	0.009435	100.00
95	Brooklyn	36047 3012	0.008467	0.008467	100.00
96	Brooklyn	36047 3013	0.011404	0.011404	100.00
97	Brooklyn	36047 3014	0.008252	0.008252	100.00
98	Brooklyn	36047 3015	0.009631	0.009631	100.00
99	Brooklyn	36047 3021	0.134493	0.134493	100.00
100	Brooklyn	36047 5431	0.484229	0.119903	24.76
101	Brooklyn	36047 29011	0.013344	0.001047	7.85
102	Brooklyn	36047 29012	0.021844	0.012015	55.00
103	Brooklyn	36047 29021	0.025302	0.019543	77.24
106	Manhattan	36061 59	0.014331	0.014331	100.00
107	Manhattan	36061 61	0.016059	0.016059	100.00
108	Manhattan	36061 62	0.050864	0.050864	100.00
109	Manhattan	36061 63	0.020233	0.020233	100.00
110	Manhattan	36061 64	0.013713	0.013713	100.00
111	Manhattan	36061 71	0.016818	0.016818	100.00
112	Manhattan	36061 72	0.025438	0.025438	100.00
113	Manhattan	36061 73	0.026558	0.026558	100.00
114	Manhattan	36061 81	0.034036	0.034036	100.00
115	Manhattan	36061 82	0.016267	0.016267	100.00
116	Manhattan	36061 83	0.024486	0.024486	100.00

117	Manhattan	36061 91	0.029689	0.029689	100.00
118	Manhattan	36061 92	0.038372	0.038372	100.00
119	Manhattan	36061 121	0.012683	0.012683	100.00
120	Manhattan	36061 122	0.012563	0.012563	100.00
121	Manhattan	36061 123	0.016262	0.016262	100.00
122	Manhattan	36061 131	0.014794	0.014794	100.00
123	Manhattan	36061 132	0.049411	0.049411	100.00
124	Manhattan	36061 133	0.017229	0.017229	100.00
125	Manhattan	36061 134	0.032505	0.032505	100.00
126	Manhattan	36061 161	0.024963	0.024963	100.00
127	Manhattan	36061 162	0.013536	0.013536	100.00
128	Manhattan	36061 163	0.008219	0.008219	100.00
129	Manhattan	36061 164	0.032861	0.032861	100.00
130	Manhattan	36061 181	0.016784	0.016784	100.00
131	Manhattan	36061 182	0.011765	0.011765	100.00
132	Manhattan	36061 183	0.011956	0.011956	100.00
133	Manhattan	36061 184	0.005703	0.005703	100.00
134	Manhattan	36061 185	0.005988	0.005988	100.00
135	Manhattan	36061 186	0.008475	0.008475	100.00
136	Manhattan	36061 187	0.020124	0.020124	100.00
137	Manhattan	36061 201	0.033618	0.031753	94.45
138	Manhattan	36061 211	0.048429	0.048429	100.00
139	Manhattan	36061 212	0.041470	0.041470	100.00
140	Manhattan	36061 242	0.022759	0.006965	30.60
141	Manhattan	36061 249	0.481237	0.036188	7.52
142	Manhattan	36061 251	0.040766	0.040766	100.00
143	Manhattan	36061 271	0.022781	0.022781	100.00
144	Manhattan	36061 281	0.035494	0.011002	31.00
145	Manhattan	36061 282	0.012584	0.012584	100.00
146	Manhattan	36061 283	0.021272	0.018043	84.82
147	Manhattan	36061 291	0.017305	0.017305	100.00
148	Manhattan	36061 292	0.018234	0.018234	100.00
149	Manhattan	36061 293	0.008044	0.008044	100.00
150	Manhattan	36061 294	0.013159	0.013159	100.00
151	Manhattan	36061 295	0.056552	0.056552	100.00
152	Manhattan	36061 311	0.033790	0.033790	100.00
153	Manhattan	36061 312	0.043218	0.043218	100.00
154	Manhattan	36061 321	0.025594	0.025594	100.00
155	Manhattan	36061 322	0.019334	0.019334	100.00
156	Manhattan	36061 323	0.018798	0.018798	100.00
157	Manhattan	36061 324	0.018849	0.018849	100.00
158	Manhattan	36061 331	0.041775	0.041775	100.00
159	Manhattan	36061 332	0.034059	0.034059	100.00
160	Manhattan	36061 333	0.054502	0.054502	100.00
161	Manhattan	36061 341	0.014063	0.014063	100.00
162	Manhattan	36061 342	0.013473	0.013473	100.00
163	Manhattan	36061 343	0.018738	0.018738	100.00
164	Manhattan	36061 344	0.013102	0.013102	100.00
165	Manhattan	36061 381	0.019564	0.019564	100.00
166	Manhattan	36061 382	0.020368	0.020368	100.00
167	Manhattan	36061 383	0.018050	0.018050	100.00
168	Manhattan	36061 384	0.019967	0.019967	100.00
169	Manhattan	36061 391	0.044874	0.044874	100.00
170	Manhattan	36061 392	0.009790	0.009790	100.00
171	Manhattan	36061 393	0.024048	0.024048	100.00
172	Manhattan	36061 394	0.024411	0.024411	100.00
173	Manhattan	36061 401	0.014471	0.014471	100.00
174	Manhattan	36061 402	0.020789	0.020789	100.00
175	Manhattan	36061 403	0.019362	0.019362	100.00
176	Manhattan	36061 404	0.013426	0.013426	100.00
177	Manhattan	36061 411	0.009522	0.009522	100.00

178	Manhattan	36061 412	0.012215	0.012215	100.00
179	Manhattan	36061 413	0.010580	0.010580	100.00
180	Manhattan	36061 414	0.011608	0.011608	100.00
181	Manhattan	36061 415	0.017844	0.017844	100.00
182	Manhattan	36061 416	0.009739	0.009739	100.00
183	Manhattan	36061 421	0.019233	0.019233	100.00
184	Manhattan	36061 422	0.012657	0.012657	100.00
185	Manhattan	36061 431	0.019655	0.019655	100.00
186	Manhattan	36061 432	0.009147	0.009147	100.00
187	Manhattan	36061 433	0.025971	0.025971	100.00
188	Manhattan	36061 451	0.021837	0.021837	100.00
189	Manhattan	36061 452	0.016142	0.016142	100.00
190	Manhattan	36061 471	0.015676	0.015676	100.00
191	Manhattan	36061 472	0.045361	0.045361	100.00
192	Manhattan	36061 491	0.053065	0.053065	100.00
193	Manhattan	36061 492	0.012624	0.012624	100.00
194	Manhattan	36061 493	0.014400	0.014400	100.00
195	Manhattan	36061 501	0.017960	0.017960	100.00
196	Manhattan	36061 502	0.044547	0.044547	100.00
197	Manhattan	36061 511	0.042714	0.042714	100.00
198	Manhattan	36061 512	0.035243	0.035243	100.00
199	Manhattan	36061 521	0.031603	0.031603	100.00
200	Manhattan	36061 522	0.031884	0.031884	100.00
201	Manhattan	36061 531	0.025379	0.025379	100.00
202	Manhattan	36061 532	0.024909	0.024909	100.00
203	Manhattan	36061 541	0.033363	0.033363	100.00
204	Manhattan	36061 542	0.028043	0.028043	100.00
205	Manhattan	36061 561	0.023267	0.021750	93.48
206	Manhattan	36061 562	0.042144	0.042144	100.00
207	Manhattan	36061 571	0.030389	0.030389	100.00
208	Manhattan	36061 572	0.010130	0.010130	100.00
209	Manhattan	36061 581	0.028276	0.028276	100.00
210	Manhattan	36061 582	0.039734	0.039734	100.00
211	Manhattan	36061 591	0.012826	0.012826	100.00
212	Manhattan	36061 592	0.015719	0.015719	100.00
213	Manhattan	36061 593	0.015864	0.015864	100.00
214	Manhattan	36061 601	0.040924	0.000370	0.90
215	Manhattan	36061 611	0.031019	0.031019	100.00
216	Manhattan	36061 612	0.020780	0.020780	100.00
217	Manhattan	36061 631	0.019034	0.019034	100.00
218	Manhattan	36061 632	0.018162	0.018162	100.00
219	Manhattan	36061 633	0.017335	0.017335	100.00
220	Manhattan	36061 634	0.012177	0.012177	100.00
221	Manhattan	36061 651	0.037282	0.037282	100.00
222	Manhattan	36061 652	0.009202	0.009202	100.00
223	Manhattan	36061 653	0.007798	0.007798	100.00
224	Manhattan	36061 654	0.008050	0.008050	100.00
225	Manhattan	36061 655	0.011969	0.011969	100.00
226	Manhattan	36061 663	0.013211	0.000781	5.92
227	Manhattan	36061 671	0.012441	0.012441	100.00
228	Manhattan	36061 672	0.015344	0.015344	100.00
229	Manhattan	36061 673	0.012406	0.012406	100.00
230	Manhattan	36061 674	0.023254	0.023254	100.00
231	Manhattan	36061 681	0.018157	0.005730	31.56
232	Manhattan	36061 682	0.009332	0.009332	100.00
233	Manhattan	36061 683	0.038121	0.031181	81.79
234	Manhattan	36061 691	0.019381	0.019381	100.00
235	Manhattan	36061 692	0.029163	0.029163	100.00
236	Manhattan	36061 711	0.017347	0.017347	100.00
237	Manhattan	36061 712	0.020496	0.020496	100.00
238	Manhattan	36061 713	0.013748	0.013748	100.00

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239	Manhattan	36061 714	0.010668	0.010668	100.00
240	Manhattan	36061 731	0.015040	0.015040	100.00
241	Manhattan	36061 732	0.013507	0.013507	100.00
242	Manhattan	36061 733	0.007758	0.007758	100.00
243	Manhattan	36061 734	0.013445	0.013445	100.00
244	Manhattan	36061 735	0.013452	0.013452	100.00
245	Manhattan	36061 742	0.027766	0.004190	15.09
246	Manhattan	36061 751	0.011987	0.011987	100.00
247	Manhattan	36061 752	0.035396	0.035396	100.00
248	Manhattan	36061 761	0.037840	0.000364	0.96
249	Manhattan	36061 762	0.027819	0.021669	77.89
250	Manhattan	36061 771	0.015334	0.015334	100.00
251	Manhattan	36061 772	0.019590	0.019590	100.00
252	Manhattan	36061 773	0.020553	0.020553	100.00
253	Manhattan	36061 774	0.012208	0.012208	100.00
254	Manhattan	36061 791	0.013085	0.013085	100.00
255	Manhattan	36061 792	0.018687	0.018687	100.00
256	Manhattan	36061 793	0.044723	0.044723	100.00
257	Manhattan	36061 811	0.015137	0.015137	100.00
258	Manhattan	36061 812	0.016797	0.016797	100.00
259	Manhattan	36061 813	0.016508	0.016508	100.00
260	Manhattan	36061 814	0.014957	0.014957	100.00
261	Manhattan	36061 831	0.014771	0.014771	100.00
262	Manhattan	36061 832	0.016235	0.016235	100.00
263	Manhattan	36061 833	0.032132	0.032132	100.00
264	Manhattan	36061 871	0.029396	0.029396	100.00
265	Manhattan	36061 872	0.015156	0.015156	100.00
266	Manhattan	36061 873	0.016009	0.016009	100.00
267	Manhattan	36061 891	0.015744	0.015744	100.00
268	Manhattan	36061 892	0.014604	0.014604	100.00
269	Manhattan	36061 893	0.015193	0.015193	100.00
270	Manhattan	36061 894	0.017514	0.017514	100.00
271	Manhattan	36061 911	0.033891	0.033891	100.00
272	Manhattan	36061 912	0.016979	0.016979	100.00
273	Manhattan	36061 913	0.016939	0.016939	100.00
274	Manhattan	36061 931	0.016644	0.016644	100.00
275	Manhattan	36061 932	0.016377	0.016377	100.00
276	Manhattan	36061 933	0.016920	0.016920	100.00
277	Manhattan	36061 934	0.018240	0.018240	100.00
278	Manhattan	36061 951	0.032408	0.032408	100.00
279	Manhattan	36061 952	0.032495	0.032495	100.00
280	Manhattan	36061 971	0.033108	0.033108	100.00
281	Manhattan	36061 972	0.032811	0.032811	100.00
282	Manhattan	36061 991	0.198896	0.176990	88.99
283	Manhattan	36061 992	0.094599	0.094599	100.00
284	Manhattan	36061 1011	0.031179	0.016572	53.15
285	Manhattan	36061 1012	0.031337	0.028133	89.77
286	Manhattan	36061 1031	0.031277	0.031277	100.00
287	Manhattan	36061 1032	0.032492	0.032492	100.00
288	Manhattan	36061 1092	0.033840	0.000262	0.77
289	Manhattan	36061 1111	0.031936	0.006735	21.09
290	Manhattan	36061 1112	0.016558	0.015010	90.65
291	Manhattan	36061 1113	0.017461	0.000523	2.99
292	Manhattan	36061 2011	0.009620	0.009620	100.00
293	Manhattan	36061 2012	0.014965	0.014965	100.00
294	Manhattan	36061 2021	0.020551	0.020551	100.00
295	Manhattan	36061 2022	0.007224	0.007224	100.00
296	Manhattan	36061 2023	0.038234	0.038234	100.00
297	Manhattan	36061 2024	0.013666	0.013666	100.00
298	Manhattan	36061 2029	0.044513	0.044513	100.00
299	Manhattan	36061 3199	0.014331	0.014331	100.00

301	Manhattan	36061 10011	0.018483	0.018483	100.00
302	Manhattan	36061 10021	0.062661	0.062661	100.00
303	Manhattan	36061 14011	0.035305	0.035305	100.00
304	Manhattan	36061 14021	0.009310	0.009310	100.00
305	Manhattan	36061 14022	0.012331	0.012331	100.00
306	Manhattan	36061 14023	0.012675	0.012675	100.00
307	Manhattan	36061 14024	0.008738	0.008738	100.00
308	Manhattan	36061 15011	0.041765	0.041765	100.00
309	Manhattan	36061 15012	0.033063	0.033063	100.00
310	Manhattan	36061 15021	0.028093	0.028093	100.00
311	Manhattan	36061 15022	0.031931	0.031931	100.00
312	Manhattan	36061 22011	0.037144	0.037144	100.00
313	Manhattan	36061 22012	0.011347	0.011347	100.00
314	Manhattan	36061 22013	0.012270	0.012270	100.00
315	Manhattan	36061 22021	0.022849	0.022849	100.00
316	Manhattan	36061 26011	0.020346	0.020346	100.00
317	Manhattan	36061 26012	0.019322	0.019322	100.00
318	Manhattan	36061 26021	0.019228	0.019226	99.99
319	Manhattan	36061 26022	0.018307	0.018307	100.00
320	Manhattan	36061 30011	0.012119	0.012119	100.00
321	Manhattan	36061 30012	0.011473	0.011473	100.00
322	Manhattan	36061 30013	0.010803	0.010803	100.00
323	Manhattan	36061 30014	0.011243	0.011243	100.00
324	Manhattan	36061 30021	0.015603	0.015603	100.00
325	Manhattan	36061 30022	0.016644	0.016644	100.00
326	Manhattan	36061 36011	0.007211	0.007211	100.00
327	Manhattan	36061 36012	0.008210	0.008210	100.00
328	Manhattan	36061 36013	0.025227	0.025227	100.00
329	Manhattan	36061 36021	0.019914	0.019914	100.00
330	Manhattan	36061 36022	0.015344	0.015344	100.00
331	Manhattan	36061 44013	0.110108	0.050970	46.29
332	Manhattan	36061 48971	0.012242	0.012242	100.00
333	Manhattan	36061 48972	0.016996	0.016996	100.00
334	Manhattan	36061 48973	0.015009	0.015009	100.00
335	Manhattan	36061 48974	0.012158	0.012158	100.00
336	Manhattan	36061 48975	0.009328	0.009328	100.00
337	Manhattan	36061 55011	0.019285	0.019285	100.00
338	Manhattan	36061 55012	0.026540	0.026540	100.00
339	Manhattan	36061 55021	0.027519	0.027519	100.00
340	Manhattan	36061 55022	0.016617	0.016617	100.00
341	Manhattan	36061 64971	0.015454	0.001337	8.65
342	Manhattan	36061 64972	0.020413	0.016737	81.99
343	Manhattan	36061 64973	0.005286	0.005286	100.00
344	Manhattan	36061 64974	0.021022	0.018203	86.59
345	Manhattan	36061 64984	0.006056	0.006056	100.00
346	Manhattan	36061 317019	0.180137	0.180137	100.00
347	Manhattan	36061 317021	1.491515	1.245725	83.52
	Totals:		18.369844	12.222965	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
21	Brooklyn	36047 214	0.053484	0.000309	0.58
53	Brooklyn	36047 551	2.564957	0.844747	32.93
99	Brooklyn	36047 3021	0.134493	0.064900	48.26
106	Manhattan	36061 59	0.014331	0.014331	100.00

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111	Manhattan	36061	71	0.016818	0.016818	100.00
112	Manhattan	36061	72	0.025438	0.025438	100.00
113	Manhattan	36061	73	0.026558	0.026558	100.00
114	Manhattan	36061	81	0.034036	0.006644	19.52
115	Manhattan	36061	82	0.016267	0.016229	99.76
116	Manhattan	36061	83	0.024486	0.024486	100.00
117	Manhattan	36061	91	0.029689	0.029689	100.00
118	Manhattan	36061	92	0.038372	0.038372	100.00
122	Manhattan	36061	131	0.014794	0.014794	100.00
123	Manhattan	36061	132	0.049411	0.049411	100.00
124	Manhattan	36061	133	0.017229	0.017229	100.00
125	Manhattan	36061	134	0.032505	0.032505	100.00
127	Manhattan	36061	162	0.013536	0.003382	24.99
129	Manhattan	36061	164	0.032861	0.029742	90.51
136	Manhattan	36061	187	0.020124	0.001782	8.86
138	Manhattan	36061	211	0.048429	0.048429	100.00
139	Manhattan	36061	212	0.041470	0.041470	100.00
142	Manhattan	36061	251	0.040766	0.040766	100.00
143	Manhattan	36061	271	0.022781	0.022781	100.00
147	Manhattan	36061	291	0.017305	0.017305	100.00
148	Manhattan	36061	292	0.018234	0.018234	100.00
149	Manhattan	36061	293	0.008044	0.008044	100.00
150	Manhattan	36061	294	0.013159	0.013159	100.00
151	Manhattan	36061	295	0.056552	0.056552	100.00
152	Manhattan	36061	311	0.033790	0.033790	100.00
153	Manhattan	36061	312	0.043218	0.043218	100.00
158	Manhattan	36061	331	0.041775	0.041775	100.00
159	Manhattan	36061	332	0.034059	0.034059	100.00
160	Manhattan	36061	333	0.054502	0.054502	100.00
169	Manhattan	36061	391	0.044874	0.044874	100.00
170	Manhattan	36061	392	0.009790	0.009790	100.00
171	Manhattan	36061	393	0.024048	0.024048	100.00
172	Manhattan	36061	394	0.024411	0.024411	100.00
177	Manhattan	36061	411	0.009522	0.007740	81.29
178	Manhattan	36061	412	0.012215	0.012215	100.00
179	Manhattan	36061	413	0.010580	0.010580	100.00
180	Manhattan	36061	414	0.011608	0.011608	100.00
181	Manhattan	36061	415	0.017844	0.017844	100.00
182	Manhattan	36061	416	0.009739	0.009739	100.00
185	Manhattan	36061	431	0.019655	0.003286	16.72
186	Manhattan	36061	432	0.009147	0.001863	20.37
187	Manhattan	36061	433	0.025971	0.025971	100.00
188	Manhattan	36061	451	0.021837	0.021837	100.00
189	Manhattan	36061	452	0.016142	0.016142	100.00
190	Manhattan	36061	471	0.015676	0.015676	100.00
191	Manhattan	36061	472	0.045361	0.045361	100.00
192	Manhattan	36061	491	0.053065	0.053065	100.00
193	Manhattan	36061	492	0.012624	0.012624	100.00
194	Manhattan	36061	493	0.014400	0.014400	100.00
197	Manhattan	36061	511	0.042714	0.042714	100.00
198	Manhattan	36061	512	0.035243	0.035243	100.00
201	Manhattan	36061	531	0.025379	0.025379	100.00
202	Manhattan	36061	532	0.024909	0.024909	100.00
220	Manhattan	36061	634	0.012177	0.001019	8.37
221	Manhattan	36061	651	0.037282	0.022099	59.27
222	Manhattan	36061	652	0.009202	0.009202	100.00
223	Manhattan	36061	653	0.007798	0.007798	100.00
224	Manhattan	36061	654	0.008050	0.008050	100.00
225	Manhattan	36061	655	0.011969	0.011969	100.00
227	Manhattan	36061	671	0.012441	0.012441	100.00
228	Manhattan	36061	672	0.015344	0.015344	100.00

229	Manhattan	36061 673	0.012406	0.012406	100.00
230	Manhattan	36061 674	0.023254	0.023254	100.00
234	Manhattan	36061 691	0.019381	0.019381	100.00
235	Manhattan	36061 692	0.029163	0.029163	100.00
238	Manhattan	36061 713	0.013748	0.012980	94.42
239	Manhattan	36061 714	0.010668	0.004731	44.35
240	Manhattan	36061 731	0.015040	0.015037	99.98
241	Manhattan	36061 732	0.013507	0.013507	100.00
242	Manhattan	36061 733	0.007758	0.007758	100.00
243	Manhattan	36061 734	0.013445	0.013445	100.00
244	Manhattan	36061 735	0.013452	0.013452	100.00
246	Manhattan	36061 751	0.011987	0.011987	100.00
247	Manhattan	36061 752	0.035396	0.035396	100.00
251	Manhattan	36061 772	0.019590	0.007952	40.59
252	Manhattan	36061 773	0.020553	0.010216	49.71
253	Manhattan	36061 774	0.012208	0.012208	100.00
254	Manhattan	36061 791	0.013085	0.012206	93.28
255	Manhattan	36061 792	0.018687	0.018687	100.00
256	Manhattan	36061 793	0.044723	0.043613	97.52
263	Manhattan	36061 833	0.032132	0.001694	5.27
283	Manhattan	36061 992	0.094599	0.001700	1.80
299	Manhattan	36061 3199	0.014331	0.014331	100.00
308	Manhattan	36061 15011	0.041765	0.041765	100.00
309	Manhattan	36061 15012	0.033063	0.033063	100.00
310	Manhattan	36061 15021	0.028093	0.028093	100.00
311	Manhattan	36061 15022	0.031931	0.031931	100.00
337	Manhattan	36061 55011	0.019285	0.004629	24.00
338	Manhattan	36061 55012	0.026540	0.021606	81.41
340	Manhattan	36061 55022	0.016617	0.001560	9.39
346	Manhattan	36061 317019	0.180137	0.180137	100.00
347	Manhattan	36061 317021	1.491515	0.797638	53.48
	Totals:		6.642548	3.806217	

For Radius of 2 Mi., Circle Area = 12.566371

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
106	Manhattan	36061 59	0.014331	0.000934	6.52
123	Manhattan	36061 132	0.049411	0.014599	29.55
124	Manhattan	36061 133	0.017229	0.011707	67.95
125	Manhattan	36061 134	0.032505	0.006395	19.67
139	Manhattan	36061 212	0.041470	0.000979	2.36
299	Manhattan	36061 3199	0.014331	0.000934	6.52
346	Manhattan	36061 317019	0.180137	0.169678	94.19
347	Manhattan	36061 317021	1.491515	0.092862	6.23
	Totals:		1.840928	0.298088	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
	Totals:		0.000000	0.000000	

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Jersey City, NJ

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For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
	Totals:		0.000000	0.000000	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
	Totals:		0.000000	0.000000	

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========== Site Data ==========

Population:	444266.19
Households:	227861.38
Drilled Wells:	26.00
Dug Wells:	152.63
Other Water Sources:	25.08

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	334533.03
Households:	170487.81
Drilled Wells:	21.00
Dug Wells:	136.63
Other Wells:	25.08

** Population On Private Wells: 309.30

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	104140.99
Households:	53447.25
Drilled Wells:	5.00
Dug Wells:	16.00
Other Wells:	0.00

** Population On Private Wells: 40.92

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	5592.17
Households:	3926.32
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: 0.00

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: Not Applicable

** Total Population On Private Wells: 350.22

FROST ASSOCIATES

P.O.Box 495, Essex, Connecticut 06426
(203) 767-7644 FAX (203) 767-1971

March 27, 1995

To: Malcolm Pirnie Inc
104 Interchange Plaza
Cranbury, New Jersey 08512-8543

Attn: Lilli Gonzalez

Fr: Frost Associates
P.O. Box 495
Essex, Conn 06426

Tel: (203) 767-1254
Fax: (203) 767-7069

Sub: Summit Metals Inc.
Jersey City, NJ

CERCLIS:

Job: 8003-411-701

Site Longitude: 74-03-08 74.052223
Site Latitude : 40-42-49 40.713612

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and

E. The formula can be expressed:

Area = 1/2{Xa(Ye-Yb)+ Xb(Ya-Yb)+ Xc(Yb-Yd)+ Xd(Yc-Ye)+ Xe(Yd-Ya)}

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 populu tion and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: ((Drilled + Dug Wells) / Households) * Population

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No.	City	Block Group ID	Blk Grp People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Lyndhurst	34003 0311 9	56	21	22	0	0	0
2	Newark	34013 0074 1	26	4	0	0	0	0
3	Newark	34013 0098 2	0	0	0	0	0	0
4	Newark	34013 0098 9	1747	1	0	0	0	0
5	Newark	34013 0074991	0	0	0	0	0	0
6	Newark	34013 0075011	737	275	276	0	0	0
7	Newark	34013 0075021	0	0	0	0	0	0
8	Jersey City	34017 0001 1	1870	754	791	0	0	0
9	Jersey City	34017 0001 2	1599	633	588	0	0	0
10	Jersey City	34017 0001 3	1927	684	692	0	0	0
11	Jersey City	34017 0002 1	1816	693	748	0	0	0
12	Jersey City	34017 0002 2	1848	763	746	0	0	8
13	Jersey City	34017 0002 3	1051	503	457	0	0	0
14	Jersey City	34017 0003 1	791	329	317	0	0	0
15	Jersey City	34017 0003 2	1652	673	640	0	0	0
16	Jersey City	34017 0003 3	1628	627	672	0	0	0
17	Jersey City	34017 0004 1	1785	677	676	0	0	0
18	Jersey City	34017 0004 2	1632	679	680	0	0	0
19	Jersey City	34017 0004 3	50	19	19	0	0	0
20	Jersey City	34017 0005 1	1866	733	738	0	0	0
21	Jersey City	34017 0005 2	994	407	441	0	0	0
22	Jersey City	34017 0005 3	1166	470	431	0	0	0
23	Jersey City	34017 0006 1	2329	980	1009	0	0	0
24	Jersey City	34017 0006 2	2898	1276	1247	0	0	0
25	Jersey City	34017 0007 1	1349	509	462	0	0	0
26	Jersey City	34017 0007 2	1606	649	686	0	0	0
27	Jersey City	34017 0007 3	850	290	300	0	0	0
28	Jersey City	34017 0008 1	1593	698	706	3	0	0
29	Jersey City	34017 0008 2	2411	937	909	0	6	11
30	Jersey City	34017 0010 2	1845	792	807	0	0	0
31	Jersey City	34017 0011 1	1318	556	544	0	0	0
32	Jersey City	34017 0011 2	2478	1013	955	17	19	0
33	Jersey City	34017 0011 3	985	382	401	0	0	0
34	Jersey City	34017 0013 1	1779	589	554	0	0	0
35	Jersey City	34017 0013 2	1486	548	561	0	0	0
36	Jersey City	34017 0014 1	1628	677	653	0	0	0
37	Jersey City	34017 0014 2	1784	719	731	0	0	0
38	Jersey City	34017 0014 3	228	109	130	0	0	0
39	Jersey City	34017 0015 1	886	289	258	0	0	0
40	Jersey City	34017 0015 2	747	302	325	0	0	0
41	Jersey City	34017 0015 3	1	1	0	0	0	0
42	Jersey City	34017 0017 1	373	148	131	0	0	0
43	Jersey City	34017 0017 2	24	10	0	0	0	0
44	Jersey City	34017 0017 3	265	89	66	0	0	0
45	Jersey City	34017 0017 4	2904	1096	1081	0	0	0
46	Jersey City	34017 0018 1	1603	595	606	0	0	0
47	Jersey City	34017 0018 2	2202	979	967	0	0	0
48	Jersey City	34017 0019 1	1601	723	724	0	0	0
49	Jersey City	34017 0020 1	2008	784	783	0	0	0
50	Jersey City	34017 0020 2	692	478	529	10	0	0
51	Jersey City	34017 0020 3	1463	698	638	0	0	0
52	Jersey City	34017 0021 1	2067	590	574	0	0	0
53	Jersey City	34017 0021 2	2565	1118	1134	0	0	0
54	Jersey City	34017 0022 2	961	457	431	0	0	0
55	Jersey City	34017 0022 3	885	429	420	0	0	0

56	Jersey City	34017 0023	1	1406	569	604	0	0	0
57	Jersey City	34017 0023	2	1025	475	475	0	0	0
58	Jersey City	34017 0024	1	641	370	380	0	0	0
59	Jersey City	34017 0024	2	1633	938	987	0	0	0
60	Jersey City	34017 0025	1	1769	692	655	0	0	5
61	Jersey City	34017 0025	2	972	444	406	0	0	0
62	Jersey City	34017 0026	1	509	227	234	0	0	0
63	Jersey City	34017 0026	2	246	78	74	0	0	0
64	Jersey City	34017 0026	3	250	157	165	0	0	0
65	Jersey City	34017 0026	4	0	0	0	0	0	0
66	Jersey City	34017 0027	1	1874	753	765	0	0	0
67	Jersey City	34017 0027	2	3543	1026	1062	0	0	0
68	Jersey City	34017 0027	3	1576	528	480	0	0	0
69	Jersey City	34017 0028	1	2032	711	697	0	0	0
70	Jersey City	34017 0028	2	1121	498	512	0	0	0
71	Jersey City	34017 0028	3	981	460	482	0	0	0
72	Jersey City	34017 0028	4	712	400	420	0	0	0
73	Jersey City	34017 0028	5	797	446	404	0	0	0
74	Jersey City	34017 0029	1	1451	578	572	0	0	0
75	Jersey City	34017 0029	2	659	321	299	0	0	0
76	Jersey City	34017 0029	3	1618	636	612	0	0	0
77	Jersey City	34017 0030	1	915	429	493	0	0	0
78	Jersey City	34017 0030	2	2178	793	763	0	0	18
79	Jersey City	34017 0031	1	1047	392	371	0	0	0
80	Jersey City	34017 0031	2	3194	1016	1037	0	0	0
81	Jersey City	34017 0032	1	1643	397	398	0	0	0
82	Jersey City	34017 0033	1	1450	455	431	0	0	0
83	Jersey City	34017 0033	2	1079	317	318	0	0	0
84	Jersey City	34017 0033	3	1493	515	535	0	0	0
85	Jersey City	34017 0033	4	591	209	211	0	0	0
86	Jersey City	34017 0034	1	642	334	346	0	0	0
87	Jersey City	34017 0034	2	823	290	291	0	0	7
88	Jersey City	34017 0034	3	177	68	57	0	0	0
89	Jersey City	34017 0035	1	2395	1180	1171	0	0	0
90	Jersey City	34017 0036	1	967	546	525	0	0	0
91	Jersey City	34017 0036	2	464	258	234	0	0	0
92	Jersey City	34017 0037	1	2427	1045	1077	0	0	0
93	Jersey City	34017 0038	1	2874	1674	1622	0	0	0
94	Jersey City	34017 0038	2	684	429	462	0	0	0
95	Jersey City	34017 0039	1	735	427	459	0	0	0
96	Jersey City	34017 0040	1	479	179	163	0	0	0
97	Jersey City	34017 0040	2	2680	947	936	0	0	0
98	Jersey City	34017 0040	3	648	250	247	0	0	0
99	Jersey City	34017 0040	4	927	412	442	0	0	0
100	Jersey City	34017 0042	1	1775	650	627	0	0	0
101	Jersey City	34017 0042	2	2550	889	903	0	0	0
102	Jersey City	34017 0042	3	397	146	155	0	0	0
103	Jersey City	34017 0043	1	1481	570	541	0	0	8
104	Jersey City	34017 0043	2	1354	513	515	0	0	0
105	Jersey City	34017 0044	1	2188	800	819	0	0	0
106	Jersey City	34017 0045	1	1005	372	369	0	0	0
107	Jersey City	34017 0045	2	1817	675	681	0	0	0
108	Jersey City	34017 0045	3	1448	459	456	0	0	0
109	Jersey City	34017 0046	1	914	319	327	0	0	0
110	Jersey City	34017 0046	2	1222	389	381	0	0	0
111	Jersey City	34017 0047	1	115	50	54	0	0	0
112	Jersey City	34017 0047	2	635	229	241	0	0	0
113	Jersey City	34017 0047	3	932	334	320	0	0	0
114	Jersey City	34017 0047	9	95	37	35	0	0	0
115	Jersey City	34017 0048	1	2284	899	939	0	0	0
116	Jersey City	34017 0048	2	795	293	272	0	0	0

117	Jersey City	34017 0048	3	308	128	109	0	0	0
118	Jersey City	34017 0049	1	1882	630	663	0	0	0
119	Jersey City	34017 0049	2	2440	825	792	0	0	0
120	Jersey City	34017 0050	1	1705	609	602	0	0	0
121	Jersey City	34017 0051	1	2149	757	759	5	0	0
122	Jersey City	34017 0052	1	4930	1783	1783	0	0	0
123	Jersey City	34017 0053	1	1314	437	387	0	0	0
124	Jersey City	34017 0053	2	1519	483	459	0	0	0
125	Jersey City	34017 0054	1	3651	1525	1599	0	0	0
126	Jersey City	34017 0055	1	2449	786	743	5	7	0
127	Jersey City	34017 0056	1	1346	482	537	0	0	0
128	Jersey City	34017 0056	2	2286	825	801	0	0	0
129	Jersey City	34017 0059	1	1608	475	448	0	0	0
130	Jersey City	34017 0059	2	1380	540	506	0	0	0
131	Jersey City	34017 0059	3	1507	649	697	0	0	0
132	Jersey City	34017 0059	4	1714	677	690	0	0	0
133	Jersey City	34017 0060	1	2413	765	820	0	0	0
134	Jersey City	34017 0060	2	2324	824	769	0	0	0
135	Jersey City	34017 0061	1	752	220	174	0	0	0
136	Jersey City	34017 0061	2	535	191	194	0	0	0
137	Jersey City	34017 0061	3	3114	996	954	0	0	0
138	Jersey City	34017 0061	4	1970	775	793	0	0	18
139	Jersey City	34017 0061	5	1040	414	463	0	0	0
140	Jersey City	34017 0062	1	1892	767	778	0	0	0
141	Jersey City	34017 0062	2	1710	679	668	0	0	0
142	Jersey City	34017 0063	1	711	381	384	0	0	0
143	Jersey City	34017 0063	2	2012	671	687	0	0	8
144	Jersey City	34017 0063	3	1986	715	688	0	0	0
145	Bayonne	34017 0101	1	1580	804	800	0	0	0
146	Bayonne	34017 0101	2	1198	460	447	0	0	0
147	Bayonne	34017 0101	3	1161	522	522	0	0	0
148	Bayonne	34017 0101	4	1180	594	611	0	0	0
149	Bayonne	34017 0102	1	1202	509	494	0	0	0
150	Bayonne	34017 0102	2	1059	444	458	0	0	0
151	Bayonne	34017 0102	3	829	342	343	0	0	0
152	Bayonne	34017 0103	1	780	328	314	0	0	0
153	Bayonne	34017 0103	2	895	356	344	0	0	0
154	Bayonne	34017 0103	3	1143	544	570	0	0	0
155	Bayonne	34017 0104	2	242	104	98	0	0	0
156	Bayonne	34017 0104	3	1471	605	580	0	0	0
157	Bayonne	34017 0104	5	1764	797	804	0	0	0
158	Bayonne	34017 0104	9	664	196	220	0	0	0
159	Bayonne	34017 0105	1	514	262	270	0	0	0
160	Bayonne	34017 0105	2	983	407	408	0	0	0
161	Bayonne	34017 0105	3	562	273	264	0	0	0
162	Bayonne	34017 0105	4	633	282	284	0	0	0
163	Bayonne	34017 0105	6	926	372	351	0	0	0
164	Bayonne	34017 0108	1	1400	497	495	0	0	0
165	Kearny	34017 0127	5	271	1	0	0	0	0
166	Kearny	34017 0127	9	109	95	103	0	0	0
167	North Bergen	34017 0148	2	1151	499	487	0	0	0
168	North Bergen	34017 0148	3	2870	1302	1287	0	0	0
169	North Bergen	34017 0148	9	346	137	135	0	0	0
170	North Bergen	34017 0149	1	2660	1018	1046	0	0	0
171	Union City	34017 0165	3	867	420	431	0	0	0
172	Union City	34017 0167	1	1475	548	536	0	0	0
173	Union City	34017 0168	2	1337	476	515	0	0	0
174	Union City	34017 0168	3	1594	568	557	0	0	0
175	Union City	34017 0169	1	1157	448	428	0	0	0
176	Union City	34017 0169	2	1565	703	699	0	0	0
177	Union City	34017 0170	1	1223	425	410	0	0	0

178	Union City	34017	0170	2	1914	660	676	0	0	0
179	Union City	34017	0170	3	925	371	370	0	0	0
180	Union City	34017	0171	1	1053	500	546	0	0	0
181	Union City	34017	0171	2	1287	559	529	0	0	0
182	Union City	34017	0171	3	918	355	364	0	0	0
183	Union City	34017	0171	4	914	367	365	0	0	0
184	Union City	34017	0172	1	1589	599	584	0	0	0
185	Union City	34017	0172	2	1219	480	472	0	0	0
186	Union City	34017	0173	1	2450	1079	1071	0	0	0
187	Union City	34017	0174	1	1051	425	422	7	0	0
188	Union City	34017	0174	2	1303	459	463	0	0	0
189	Union City	34017	0175	1	2047	692	676	0	0	0
190	Union City	34017	0175	2	1513	576	589	0	3	0
191	Union City	34017	0176	1	2617	1007	1047	0	0	0
192	Union City	34017	0177	1	911	465	426	0	0	0
193	Union City	34017	0177	2	1199	434	433	0	0	0
194	Union City	34017	0178	1	1831	971	989	0	0	0
195	Union City	34017	0178	2	1330	513	484	0	0	0
196	Union City	34017	0178	3	1038	368	374	0	0	0
197	Union City	34017	0178	4	1564	521	526	0	0	0
198	Weehawken	34017	0179	1	743	422	416	0	0	0
199	Weehawken	34017	0181	2	1219	479	473	0	0	0
200	Weehawken	34017	0182	1	1021	541	571	0	0	0
201	Weehawken	34017	0182	2	1639	703	712	5	0	7
202	Weehawken	34017	0182	3	1528	643	592	0	0	0
203	Hoboken	34017	0183	1	0	0	0	0	0	0
204	Hoboken	34017	0184	1	43	11	10	0	0	0
205	Hoboken	34017	0184	2	655	288	276	0	0	0
206	Hoboken	34017	0184	3	1073	587	590	0	0	0
207	Hoboken	34017	0184	4	1244	674	645	0	0	0
208	Hoboken	34017	0185	1	2002	1009	1016	0	0	0
209	Hoboken	34017	0185	2	539	263	276	0	0	0
210	Hoboken	34017	0185	3	803	416	422	0	0	0
211	Hoboken	34017	0186	1	2552	1349	1362	0	0	0
212	Hoboken	34017	0187	1	3808	1889	1890	0	0	0
213	Hoboken	34017	0187	2	1920	851	839	0	0	0
214	Hoboken	34017	0187	3	771	493	504	0	0	0
215	Hoboken	34017	0188	1	824	423	391	0	0	6
216	Hoboken	34017	0188	2	792	448	442	0	0	0
217	Hoboken	34017	0188	3	1693	902	948	0	0	0
218	Hoboken	34017	0189	1	1625	807	822	0	0	0
219	Hoboken	34017	0189	2	730	397	368	0	0	0
220	Hoboken	34017	0190	1	1204	712	672	0	0	0
221	Hoboken	34017	0190	2	3493	1309	1320	0	0	0
222	Hoboken	34017	0191	1	1102	646	662	0	0	0
223	Hoboken	34017	0191	2	1569	860	873	0	0	0
224	Hoboken	34017	0192	1	605	328	312	0	0	0
225	Hoboken	34017	0192	2	372	298	288	0	0	0
226	Hoboken	34017	0192	3	215	121	113	0	0	0
227	Hoboken	34017	0193	1	75	97	97	0	0	0
228	Hoboken	34017	0193	2	702	479	498	0	0	0
229	Hoboken	34017	0193	3	1144	589	571	0	0	0
230	Hoboken	34017	0194	1	1344	811	857	0	0	0
231	Hoboken	34017	0194	2	498	364	351	0	0	0
232	Secaucus	34017	0196	5	1799	974	921	0	0	0
233	Secaucus	34017	0197	3	1084	405	430	0	0	0
234	Jersey City	34017	0009019		12	3	0	0	0	0
235	Jersey City	34017	0009021		1651	628	607	0	0	0
236	Jersey City	34017	0009022		3917	2227	2251	0	0	0
237	Jersey City	34017	0012011		2022	815	838	10	0	0
238	Jersey City	34017	0012021		1558	656	645	0	0	0

239	Jersey City	34017 0016011	57	23	22	0	0	0
240	Jersey City	34017 0016012	0	0	0	0	0	0
241	Jersey City	34017 0016021	962	581	582	0	0	0
242	Jersey City	34017 0016022	3119	2097	2162	0	0	0
243	Jersey City	34017 0041011	4460	1840	1800	0	0	0
244	Jersey City	34017 0041012	2713	1012	808	0	0	0
245	Jersey City	34017 0041021	2081	604	740	0	0	0
246	Jersey City	34017 0041022	1306	460	568	0	0	0
247	Jersey City	34017 0058011	3470	1138	1148	0	0	9
248	Jersey City	34017 0058012	2211	664	674	0	0	10
249	Jersey City	34017 0058021	528	319	280	0	0	0
250	Bayonne	34017 0104999	39	0	0	0	0	0
251	Bayonne	34017 0108991	27	0	0	0	0	0
	Totals:		339083	139351	139084	62	35	115

Summit Metals Inc.
Jersey City, NJ

City	Census Tract ID	Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Wells
Bayonne	34017 0108991	27	0	0	0	0	0
Bayonne	34017 0104 9	664	196	220	0	0	0
Bayonne	34017 0105 1	514	262	270	0	0	0
Bayonne	34017 0105 2	983	407	408	0	0	0
Bayonne	34017 0105 3	562	273	264	0	0	0
Bayonne	34017 0105 4	633	282	284	0	0	0
Bayonne	34017 0105 6	926	372	351	0	0	0
Bayonne	34017 0108 1	1400	497	495	0	0	0
Bayonne	34017 0102 1	1202	509	494	0	0	0
Bayonne	34017 0102 2	1059	444	458	0	0	0
Bayonne	34017 0102 3	829	342	343	0	0	0
Bayonne	34017 0103 1	780	328	314	0	0	0
Bayonne	34017 0103 2	895	356	344	0	0	0
Bayonne	34017 0103 3	1143	544	570	0	0	0
Bayonne	34017 0104 2	242	104	98	0	0	0
Bayonne	34017 0104 3	1471	605	580	0	0	0
Bayonne	34017 0104 5	1764	797	804	0	0	0
Bayonne	34017 0104999	39	0	0	0	0	0
Bayonne	34017 0101 3	1161	522	522	0	0	0
Bayonne	34017 0101 1	1580	804	800	0	0	0
Bayonne	34017 0101 2	1198	460	447	0	0	0
Bayonne	34017 0101 4	1180	594	611	0	0	0
	Sub Totals:	20252	8698	8677	0	0	0
Hoboken	34017 0184 3	1073	587	590	0	0	0
Hoboken	34017 0193 1	75	97	97	0	0	0
Hoboken	34017 0193 2	702	479	498	0	0	0
Hoboken	34017 0193 3	1144	589	571	0	0	0
Hoboken	34017 0194 1	1344	811	857	0	0	0
Hoboken	34017 0194 2	498	364	351	0	0	0
Hoboken	34017 0188 1	824	423	391	0	0	6
Hoboken	34017 0188 2	792	448	442	0	0	0
Hoboken	34017 0183 1	0	0	0	0	0	0
Hoboken	34017 0184 1	43	11	10	0	0	0
Hoboken	34017 0184 2	655	288	276	0	0	0
Hoboken	34017 0190 2	3493	1309	1320	0	0	0
Hoboken	34017 0191 1	1102	646	662	0	0	0
Hoboken	34017 0191 2	1569	860	873	0	0	0
Hoboken	34017 0192 1	605	328	312	0	0	0
Hoboken	34017 0192 2	372	298	288	0	0	0
Hoboken	34017 0192 3	215	121	113	0	0	0
Hoboken	34017 0186 1	2552	1349	1362	0	0	0
Hoboken	34017 0187 1	3808	1889	1890	0	0	0
Hoboken	34017 0187 2	1920	851	839	0	0	0
Hoboken	34017 0187 3	771	493	504	0	0	0
Hoboken	34017 0184 4	1244	674	645	0	0	0
Hoboken	34017 0185 1	2002	1009	1016	0	0	0
Hoboken	34017 0188 3	1693	902	948	0	0	0
Hoboken	34017 0189 1	1625	807	822	0	0	0
Hoboken	34017 0190 1	1204	712	672	0	0	0
Hoboken	34017 0189 2	730	397	368	0	0	0
Hoboken	34017 0185 2	539	263	276	0	0	0
Hoboken	34017 0185 3	803	416	422	0	0	0
	Sub Totals:	33397	17421	17415	0	0	6

Jersey City	34017 0003	2	1652	673	640	0	0	0
Jersey City	34017 0020	2	692	478	529	10	0	0
Jersey City	34017 0003	1	791	329	317	0	0	0
Jersey City	34017 0001	2	1599	633	588	0	0	0
Jersey City	34017 0001	3	1927	684	692	0	0	0
Jersey City	34017 0002	1	1816	693	748	0	0	0
Jersey City	34017 0002	2	1848	763	746	0	0	8
Jersey City	34017 0002	3	1051	503	457	0	0	0
Jersey City	34017 0017	4	2904	1096	1081	0	0	0
Jersey City	34017 0018	1	1603	595	606	0	0	0
Jersey City	34017 0018	2	2202	979	967	0	0	0
Jersey City	34017 0019	1	1601	723	724	0	0	0
Jersey City	34017 0020	1	2008	784	783	0	0	0
Jersey City	34017 0056	2	2286	825	801	0	0	0
Jersey City	34017 0059	1	1608	475	448	0	0	0
Jersey City	34017 0059	2	1380	540	506	0	0	0
Jersey City	34017 0059	3	1507	649	697	0	0	0
Jersey City	34017 0059	4	1714	677	690	0	0	0
Jersey City	34017 0001	1	1870	754	791	0	0	0
Jersey City	34017 0028	3	981	460	482	0	0	0
Jersey City	34017 0028	4	712	400	420	0	0	0
Jersey City	34017 0028	5	797	446	404	0	0	0
Jersey City	34017 0029	1	1451	578	572	0	0	0
Jersey City	34017 0029	2	659	321	299	0	0	0
Jersey City	34017 0029	3	1618	636	612	0	0	0
Jersey City	34017 0030	1	915	429	493	0	0	0
Jersey City	34017 0003	3	1628	627	672	0	0	0
Jersey City	34017 0056	1	1346	482	537	0	0	0
Jersey City	34017 0004	2	1632	679	680	0	0	0
Jersey City	34017 0004	3	50	19	19	0	0	0
Jersey City	34017 0020	3	1463	698	638	0	0	0
Jersey City	34017 0021	1	2067	590	574	0	0	0
Jersey City	34017 0021	2	2565	1118	1134	0	0	0
Jersey City	34017 0022	2	961	457	431	0	0	0
Jersey City	34017 0022	3	885	429	420	0	0	0
Jersey City	34017 0023	1	1406	569	604	0	0	0
Jersey City	34017 0023	2	1025	475	475	0	0	0
Jersey City	34017 0024	1	641	370	380	0	0	0
Jersey City	34017 0024	2	1633	938	987	0	0	0
Jersey City	34017 0025	1	1769	692	655	0	0	5
Jersey City	34017 0025	2	972	444	406	0	0	0
Jersey City	34017 0026	1	509	227	234	0	0	0
Jersey City	34017 0004	1	1785	677	676	0	0	0
Jersey City	34017 0026	3	250	157	165	0	0	0
Jersey City	34017 0026	4	0	0	0	0	0	0
Jersey City	34017 0027	1	1874	753	765	0	0	0
Jersey City	34017 0027	2	3543	1026	1062	0	0	0
Jersey City	34017 0027	3	1576	528	480	0	0	0
Jersey City	34017 0028	1	2032	711	697	0	0	0
Jersey City	34017 0028	2	1121	498	512	0	0	0
Jersey City	34017 0015	2	747	302	325	0	0	0
Jersey City	34017 0015	3	1	1	0	0	0	0
Jersey City	34017 0017	1	373	148	131	0	0	0
Jersey City	34017 0017	2	24	10	0	0	0	0
Jersey City	34017 0017	3	265	89	66	0	0	0
Jersey City	34017 0045	2	1817	675	681	0	0	0
Jersey City	34017 0045	3	1448	459	456	0	0	0
Jersey City	34017 0046	1	914	319	327	0	0	0
Jersey City	34017 0046	2	1222	389	381	0	0	0
Jersey City	34017 0047	1	115	50	54	0	0	0
Jersey City	34017 0047	2	635	229	241	0	0	0

Jersey City	34017 0047	3	932	334	320	0	0	0
Jersey City	34017 0047	9	95	37	35	0	0	0
Jersey City	34017 0048	1	2284	899	939	0	0	0
Jersey City	34017 0048	2	795	293	272	0	0	0
Jersey City	34017 0048	3	308	128	109	0	0	0
Jersey City	34017 0049	1	1882	630	663	0	0	0
Jersey City	34017 0049	2	2440	825	792	0	0	0
Jersey City	34017 0050	1	1705	609	602	0	0	0
Jersey City	34017 0051	1	2149	757	759	5	0	0
Jersey City	34017 0052	1	4930	1783	1783	0	0	0
Jersey City	34017 0053	1	1314	437	387	0	0	0
Jersey City	34017 0053	2	1519	483	459	0	0	0
Jersey City	34017 0026	2	246	78	74	0	0	0
Jersey City	34017 0055	1	2449	786	743	5	7	0
Jersey City	34017 0011	3	985	382	401	0	0	0
Jersey City	34017 0013	1	1779	589	554	0	0	0
Jersey City	34017 0013	2	1486	548	561	0	0	0
Jersey City	34017 0014	1	1628	677	653	0	0	0
Jersey City	34017 0014	2	1784	719	731	0	0	0
Jersey City	34017 0014	3	228	109	130	0	0	0
Jersey City	34017 0060	1	2413	765	820	0	0	0
Jersey City	34017 0060	2	2324	824	769	0	0	0
Jersey City	34017 0061	1	752	220	174	0	0	0
Jersey City	34017 0061	2	535	191	194	0	0	0
Jersey City	34017 0061	3	3114	996	954	0	0	0
Jersey City	34017 0061	4	1970	775	793	0	0	18
Jersey City	34017 0061	5	1040	414	463	0	0	0
Jersey City	34017 0062	1	1892	767	778	0	0	0
Jersey City	34017 0062	2	1710	679	668	0	0	0
Jersey City	34017 0063	1	711	381	384	0	0	0
Jersey City	34017 0063	2	2012	671	687	0	0	8
Jersey City	34017 0063	3	1986	715	688	0	0	0
Jersey City	34017 0005	1	1866	733	738	0	0	0
Jersey City	34017 0005	2	994	407	441	0	0	0
Jersey City	34017 0005	3	1166	470	431	0	0	0
Jersey City	34017 0006	1	2329	980	1009	0	0	0
Jersey City	34017 0006	2	2898	1276	1247	0	0	0
Jersey City	34017 0007	1	1349	509	462	0	0	0
Jersey City	34017 0007	2	1606	649	686	0	0	0
Jersey City	34017 0007	3	850	290	300	0	0	0
Jersey City	34017 0008	1	1593	698	706	3	0	0
Jersey City	34017 0008	2	2411	937	909	0	6	11
Jersey City	34017 0010	2	1845	792	807	0	0	0
Jersey City	34017 0011	1	1318	556	544	0	0	0
Jersey City	34017 0011	2	2478	1013	955	17	19	0
Jersey City	34017 0039	1	735	427	459	0	0	0
Jersey City	34017 0040	1	479	179	163	0	0	0
Jersey City	34017 0040	2	2680	947	936	0	0	0
Jersey City	34017 0040	3	648	250	247	0	0	0
Jersey City	34017 0040	4	927	412	442	0	0	0
Jersey City	34017 0042	1	1775	650	627	0	0	0
Jersey City	34017 0015	1	886	289	258	0	0	0
Jersey City	34017 0042	3	397	146	155	0	0	0
Jersey City	34017 0043	1	1481	570	541	0	0	8
Jersey City	34017 0043	2	1354	513	515	0	0	0
Jersey City	34017 0044	1	2188	800	819	0	0	0
Jersey City	34017 0045	1	1005	372	369	0	0	0
Jersey City	34017 0058011		3470	1138	1148	0	0	9
Jersey City	34017 0058012		2211	664	674	0	0	10
Jersey City	34017 0009019		12	3	0	0	0	0
Jersey City	34017 0009021		1651	628	607	0	0	0

Jersey City	34017 0009022	3917	2227	2251	0	0	0
Jersey City	34017 0012011	2022	815	838	10	0	0
Jersey City	34017 0012021	1558	656	645	0	0	0
Jersey City	34017 0016011	57	23	22	0	0	0
Jersey City	34017 0016012	0	0	0	0	0	0
Jersey City	34017 0016021	962	581	582	0	0	0
Jersey City	34017 0016022	3119	2097	2162	0	0	0
Jersey City	34017 0041011	4460	1840	1800	0	0	0
Jersey City	34017 0041012	2713	1012	808	0	0	0
Jersey City	34017 0041021	2081	604	740	0	0	0
Jersey City	34017 0041022	1306	460	568	0	0	0
Jersey City	34017 0036 1	967	546	525	0	0	0
Jersey City	34017 0036 2	464	258	234	0	0	0
Jersey City	34017 0058021	528	319	280	0	0	0
Jersey City	34017 0054 1	3651	1525	1599	0	0	0
Jersey City	34017 0031 1	1047	392	371	0	0	0
Jersey City	34017 0031 2	3194	1016	1037	0	0	0
Jersey City	34017 0032 1	1643	397	398	0	0	0
Jersey City	34017 0033 1	1450	455	431	0	0	0
Jersey City	34017 0033 2	1079	317	318	0	0	0
Jersey City	34017 0033 3	1493	515	535	0	0	0
Jersey City	34017 0042 2	2550	889	903	0	0	0
Jersey City	34017 0034 1	642	334	346	0	0	0
Jersey City	34017 0034 2	823	290	291	0	0	7
Jersey City	34017 0034 3	177	68	57	0	0	0
Jersey City	34017 0035 1	2395	1180	1171	0	0	0
Jersey City	34017 0030 2	2178	793	763	0	0	18
Jersey City	34017 0038 2	684	429	462	0	0	0
Jersey City	34017 0037 1	2427	1045	1077	0	0	0
Jersey City	34017 0033 4	591	209	211	0	0	0
Jersey City	34017 0038 1	2874	1674	1622	0	0	0
	Sub Totals:	228537	90723	90539	50	32	102
Kearny	34017 0127 5	271	1	0	0	0	0
Kearny	34017 0127 9	109	95	103	0	0	0
	Sub Totals:	380	96	103	0	0	0
Lyndhurst	34003 0311 9	56	21	22	0	0	0
	Sub Totals:	56	21	22	0	0	0
Newark	34013 0075011	737	275	276	0	0	0
Newark	34013 0074991	0	0	0	0	0	0
Newark	34013 0074 1	26	4	0	0	0	0
Newark	34013 0098 9	1747	1	0	0	0	0
Newark	34013 0098 2	0	0	0	0	0	0
Newark	34013 0075021	0	0	0	0	0	0
	Sub Totals:	2510	280	276	0	0	0
North Bergen	34017 0148 9	346	137	135	0	0	0
North Bergen	34017 0148 3	2870	1302	1287	0	0	0
North Bergen	34017 0149 1	2660	1018	1046	0	0	0
North Bergen	34017 0148 2	1151	499	487	0	0	0
	Sub Totals:	7027	2956	2955	0	0	0
Secaucus	34017 0197 3	1084	405	430	0	0	0
Secaucus	34017 0196 5	1799	974	921	0	0	0

	Sub Totals:		2883	1379	1351	0	0	0
Union City	34017 0165	3	867	420	431	0	0	0
Union City	34017 0175	2	1513	576	589	0	3	0
Union City	34017 0176	1	2617	1007	1047	0	0	0
Union City	34017 0177	1	911	465	426	0	0	0
Union City	34017 0177	2	1199	434	433	0	0	0
Union City	34017 0178	1	1831	971	989	0	0	0
Union City	34017 0178	2	1330	513	484	0	0	0
Union City	34017 0178	3	1038	368	374	0	0	0
Union City	34017 0178	4	1564	521	526	0	0	0
Union City	34017 0171	3	918	355	364	0	0	0
Union City	34017 0171	4	914	367	365	0	0	0
Union City	34017 0172	1	1589	599	584	0	0	0
Union City	34017 0172	2	1219	480	472	0	0	0
Union City	34017 0173	1	2450	1079	1071	0	0	0
Union City	34017 0167	1	1475	548	536	0	0	0
Union City	34017 0168	2	1337	476	515	0	0	0
Union City	34017 0168	3	1594	568	557	0	0	0
Union City	34017 0169	1	1157	448	428	0	0	0
Union City	34017 0169	2	1565	703	699	0	0	0
Union City	34017 0170	1	1223	425	410	0	0	0
Union City	34017 0170	2	1914	660	676	0	0	0
Union City	34017 0170	3	925	371	370	0	0	0
Union City	34017 0171	1	1053	500	546	0	0	0
Union City	34017 0171	2	1287	559	529	0	0	0
Union City	34017 0175	1	2047	692	676	0	0	0
Union City	34017 0174	1	1051	425	422	7	0	0
Union City	34017 0174	2	1303	459	463	0	0	0
	Sub Totals:		37891	14989	14982	7	3	0
Weehawken	34017 0181	2	1219	479	473	0	0	0
Weehawken	34017 0182	3	1528	643	592	0	0	0
Weehawken	34017 0182	1	1021	541	571	0	0	0
Weehawken	34017 0182	2	1639	703	712	5	0	7
Weehawken	34017 0179	1	743	422	416	0	0	0
	Sub Totals:		6150	2788	2764	5	0	7

Summit Metals Inc.
Jersey City, NJ

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Lyndhurst	34003 3119	2.869112	0.015012	0.52
2	Newark	34013 741	1.555282	0.645315	41.49
3	Newark	34013 982	2.571801	0.075175	2.92
4	Newark	34013 989	4.347861	0.427299	9.83
6	Newark	34013 75011	0.599499	0.105383	17.58
7	Newark	34013 75021	0.468898	0.248639	53.03
8	Jersey City	34017 11	0.042025	0.042025	100.00
9	Jersey City	34017 12	0.046303	0.046303	100.00
10	Jersey City	34017 13	0.077944	0.077944	100.00
11	Jersey City	34017 21	0.037881	0.037881	100.00
12	Jersey City	34017 22	0.042582	0.042582	100.00
13	Jersey City	34017 23	0.015928	0.015928	100.00
14	Jersey City	34017 31	0.048298	0.048298	100.00
15	Jersey City	34017 32	0.036128	0.036128	100.00
16	Jersey City	34017 33	0.033747	0.033747	100.00
17	Jersey City	34017 41	0.094182	0.094182	100.00
18	Jersey City	34017 42	0.053367	0.053367	100.00
19	Jersey City	34017 43	0.021044	0.021044	100.00
20	Jersey City	34017 51	0.042716	0.042716	100.00
21	Jersey City	34017 52	0.017864	0.017864	100.00
22	Jersey City	34017 53	0.022666	0.022666	100.00
23	Jersey City	34017 61	0.049508	0.049508	100.00
24	Jersey City	34017 62	0.070286	0.070286	100.00
25	Jersey City	34017 71	0.035702	0.035702	100.00
26	Jersey City	34017 72	0.039618	0.039618	100.00
27	Jersey City	34017 73	0.011704	0.011704	100.00
28	Jersey City	34017 81	0.079342	0.079342	100.00
29	Jersey City	34017 82	0.044958	0.044958	100.00
30	Jersey City	34017 102	0.049609	0.049609	100.00
31	Jersey City	34017 111	0.068453	0.068453	100.00
32	Jersey City	34017 112	0.075340	0.075340	100.00
33	Jersey City	34017 113	0.055863	0.055863	100.00
34	Jersey City	34017 131	0.093597	0.093597	100.00
35	Jersey City	34017 132	0.030388	0.030388	100.00
36	Jersey City	34017 141	0.034209	0.034209	100.00
37	Jersey City	34017 142	0.033492	0.033492	100.00
38	Jersey City	34017 143	0.017848	0.017848	100.00
39	Jersey City	34017 151	0.050114	0.050114	100.00
40	Jersey City	34017 152	0.083958	0.083958	100.00
41	Jersey City	34017 153	0.093321	0.093321	100.00
42	Jersey City	34017 171	0.112371	0.112371	100.00
43	Jersey City	34017 172	0.065158	0.065158	100.00
44	Jersey City	34017 173	0.054242	0.054242	100.00
45	Jersey City	34017 174	0.256479	0.256479	100.00
46	Jersey City	34017 181	0.040036	0.040036	100.00
47	Jersey City	34017 182	0.041528	0.041528	100.00
48	Jersey City	34017 191	0.071223	0.071223	100.00
49	Jersey City	34017 201	0.060748	0.060748	100.00
50	Jersey City	34017 202	0.030332	0.030332	100.00
51	Jersey City	34017 203	0.040569	0.040569	100.00
52	Jersey City	34017 211	0.049562	0.049562	100.00
53	Jersey City	34017 212	0.108107	0.108107	100.00
54	Jersey City	34017 222	0.037988	0.037988	100.00

55	Jersey City	34017	223	0.019850	0.019850	100.00
56	Jersey City	34017	231	0.025478	0.025478	100.00
57	Jersey City	34017	232	0.029567	0.029567	100.00
58	Jersey City	34017	241	0.026310	0.026310	100.00
59	Jersey City	34017	242	0.034958	0.034958	100.00
60	Jersey City	34017	251	0.029344	0.029344	100.00
61	Jersey City	34017	252	0.031499	0.031499	100.00
62	Jersey City	34017	261	0.016489	0.016489	100.00
63	Jersey City	34017	262	0.032775	0.032775	100.00
64	Jersey City	34017	263	0.045003	0.045003	100.00
65	Jersey City	34017	264	0.416142	0.416142	100.00
66	Jersey City	34017	271	0.170546	0.170546	100.00
67	Jersey City	34017	272	0.235074	0.235074	100.00
68	Jersey City	34017	273	0.037045	0.037045	100.00
69	Jersey City	34017	281	0.024373	0.024373	100.00
70	Jersey City	34017	282	0.045882	0.045882	100.00
71	Jersey City	34017	283	0.012136	0.012136	100.00
72	Jersey City	34017	284	0.015464	0.015464	100.00
73	Jersey City	34017	285	0.013127	0.013127	100.00
74	Jersey City	34017	291	0.026714	0.026714	100.00
75	Jersey City	34017	292	0.013894	0.013894	100.00
76	Jersey City	34017	293	0.036665	0.036665	100.00
77	Jersey City	34017	301	0.039647	0.039647	100.00
78	Jersey City	34017	302	0.049133	0.049133	100.00
79	Jersey City	34017	311	0.017940	0.017940	100.00
80	Jersey City	34017	312	0.083825	0.083825	100.00
81	Jersey City	34017	321	0.137606	0.137606	100.00
82	Jersey City	34017	331	0.009099	0.009099	100.00
83	Jersey City	34017	332	0.072592	0.072592	100.00
84	Jersey City	34017	333	0.064403	0.064403	100.00
85	Jersey City	34017	334	0.080330	0.080330	100.00
86	Jersey City	34017	341	0.057659	0.057659	100.00
87	Jersey City	34017	342	0.024412	0.024412	100.00
88	Jersey City	34017	343	0.053799	0.053799	100.00
89	Jersey City	34017	351	0.032612	0.032612	100.00
90	Jersey City	34017	361	0.145053	0.145053	100.00
92	Jersey City	34017	371	0.050214	0.050214	100.00
93	Jersey City	34017	381	0.048697	0.048697	100.00
94	Jersey City	34017	382	0.017040	0.017040	100.00
95	Jersey City	34017	391	0.391058	0.391058	100.00
96	Jersey City	34017	401	0.210982	0.210982	100.00
97	Jersey City	34017	402	0.070251	0.070251	100.00
98	Jersey City	34017	403	0.026326	0.026326	100.00
99	Jersey City	34017	404	0.358014	0.358014	100.00
100	Jersey City	34017	421	0.039979	0.039979	100.00
101	Jersey City	34017	422	0.057119	0.057119	100.00
102	Jersey City	34017	423	0.017411	0.017411	100.00
103	Jersey City	34017	431	0.045820	0.045820	100.00
104	Jersey City	34017	432	0.035132	0.035132	100.00
105	Jersey City	34017	441	0.061441	0.061441	100.00
106	Jersey City	34017	451	0.035751	0.035751	100.00
107	Jersey City	34017	452	0.056601	0.056601	100.00
108	Jersey City	34017	453	0.058452	0.058452	100.00
109	Jersey City	34017	461	0.022218	0.022218	100.00
110	Jersey City	34017	462	0.150043	0.150043	100.00
111	Jersey City	34017	471	0.038468	0.038468	100.00
112	Jersey City	34017	472	0.069657	0.069657	100.00
113	Jersey City	34017	473	0.029558	0.029558	100.00
114	Jersey City	34017	479	2.819429	2.819429	100.00
115	Jersey City	34017	481	0.308642	0.308642	100.00
116	Jersey City	34017	482	0.067226	0.067226	100.00

117	Jersey City	34017 483	0.071009	0.071009	100.00
118	Jersey City	34017 491	0.076207	0.076207	100.00
119	Jersey City	34017 492	0.064554	0.064554	100.00
120	Jersey City	34017 501	0.074577	0.074577	100.00
121	Jersey City	34017 511	0.055714	0.055714	100.00
122	Jersey City	34017 521	0.137899	0.137899	100.00
123	Jersey City	34017 531	0.035310	0.035310	100.00
124	Jersey City	34017 532	0.046096	0.046096	100.00
125	Jersey City	34017 541	1.129591	1.129591	100.00
126	Jersey City	34017 551	0.081529	0.081529	100.00
127	Jersey City	34017 561	0.029880	0.029880	100.00
128	Jersey City	34017 562	0.057373	0.057373	100.00
129	Jersey City	34017 591	0.049785	0.049785	100.00
130	Jersey City	34017 592	0.048348	0.048348	100.00
131	Jersey City	34017 593	0.049098	0.049098	100.00
132	Jersey City	34017 594	0.084850	0.084850	100.00
133	Jersey City	34017 601	0.073915	0.073915	100.00
134	Jersey City	34017 602	0.068675	0.068675	100.00
135	Jersey City	34017 611	0.034493	0.034493	100.00
136	Jersey City	34017 612	0.038683	0.038683	100.00
137	Jersey City	34017 613	0.081136	0.081136	100.00
138	Jersey City	34017 614	0.096464	0.096464	100.00
139	Jersey City	34017 615	0.042628	0.042628	100.00
140	Jersey City	34017 621	0.055648	0.055648	100.00
141	Jersey City	34017 622	0.045808	0.045808	100.00
142	Jersey City	34017 631	0.070424	0.070424	100.00
143	Jersey City	34017 632	0.124690	0.124690	100.00
144	Jersey City	34017 633	0.059312	0.059312	100.00
145	Bayonne	34017 1011	0.680457	0.680457	100.00
146	Bayonne	34017 1012	0.041960	0.041960	100.00
147	Bayonne	34017 1013	0.036188	0.036188	100.00
148	Bayonne	34017 1014	0.040694	0.040694	100.00
149	Bayonne	34017 1021	0.040901	0.040901	100.00
150	Bayonne	34017 1022	0.041780	0.041780	100.00
151	Bayonne	34017 1023	0.027293	0.027293	100.00
152	Bayonne	34017 1031	0.555658	0.555658	100.00
153	Bayonne	34017 1032	0.034669	0.034669	100.00
154	Bayonne	34017 1033	0.037918	0.037918	100.00
155	Bayonne	34017 1042	0.062251	0.037618	60.43
156	Bayonne	34017 1043	0.053696	0.028398	52.89
157	Bayonne	34017 1045	0.075990	0.023110	30.41
158	Bayonne	34017 1049	1.461323	1.359618	93.04
159	Bayonne	34017 1051	0.022939	0.022939	100.00
160	Bayonne	34017 1052	0.033034	0.033034	100.00
161	Bayonne	34017 1053	0.042658	0.042658	100.00
162	Bayonne	34017 1054	0.029292	0.012586	42.97
163	Bayonne	34017 1056	0.700303	0.218070	31.14
164	Bayonne	34017 1081	3.045808	0.339690	11.15
165	Kearny	34017 1275	0.673756	0.673756	100.00
166	Kearny	34017 1279	6.990788	3.102417	44.38
167	North Bergen	34017 1482	0.041980	0.001178	2.81
168	North Bergen	34017 1483	0.112072	0.101533	90.60
169	North Bergen	34017 1489	0.940350	0.451449	48.01
170	North Bergen	34017 1491	0.076907	0.076907	100.00
171	Union City	34017 1653	0.026636	0.006520	24.48
172	Union City	34017 1671	0.057500	0.001194	2.08
173	Union City	34017 1682	0.021782	0.006218	28.55
174	Union City	34017 1683	0.026548	0.020789	78.30
175	Union City	34017 1691	0.023305	0.023305	100.00
176	Union City	34017 1692	0.030667	0.030667	100.00
177	Union City	34017 1701	0.025445	0.023787	93.48

178	Union City	34017 1702	0.028310	0.028310	100.00
179	Union City	34017 1703	0.022112	0.022112	100.00
180	Union City	34017 1711	0.049483	0.049483	100.00
181	Union City	34017 1712	0.029471	0.029471	100.00
182	Union City	34017 1713	0.019171	0.019171	100.00
183	Union City	34017 1714	0.025404	0.025404	100.00
184	Union City	34017 1721	0.024179	0.024179	100.00
185	Union City	34017 1722	0.019081	0.019081	100.00
186	Union City	34017 1731	0.049470	0.049470	100.00
187	Union City	34017 1741	0.021418	0.021418	100.00
188	Union City	34017 1742	0.019009	0.019009	100.00
189	Union City	34017 1751	0.028117	0.028117	100.00
190	Union City	34017 1752	0.019145	0.019145	100.00
191	Union City	34017 1761	0.049322	0.049322	100.00
192	Union City	34017 1771	0.019790	0.019790	100.00
193	Union City	34017 1772	0.026867	0.026867	100.00
194	Union City	34017 1781	0.087342	0.087342	100.00
195	Union City	34017 1782	0.032537	0.032537	100.00
196	Union City	34017 1783	0.014538	0.014538	100.00
197	Union City	34017 1784	0.024248	0.024248	100.00
198	Weehawken	34017 1791	1.083066	0.483621	44.65
199	Weehawken	34017 1812	0.042984	0.000325	0.76
200	Weehawken	34017 1821	0.069540	0.068317	98.24
201	Weehawken	34017 1822	0.042548	0.041280	97.02
202	Weehawken	34017 1823	0.074855	0.074855	100.00
203	Hoboken	34017 1831	0.879027	0.879027	100.00
204	Hoboken	34017 1841	0.099484	0.099484	100.00
205	Hoboken	34017 1842	0.030370	0.030370	100.00
206	Hoboken	34017 1843	0.031715	0.031715	100.00
207	Hoboken	34017 1844	0.060306	0.060306	100.00
208	Hoboken	34017 1851	0.049895	0.049895	100.00
209	Hoboken	34017 1852	0.057225	0.057225	100.00
210	Hoboken	34017 1853	0.027119	0.027119	100.00
211	Hoboken	34017 1861	0.035816	0.035816	100.00
212	Hoboken	34017 1871	0.057166	0.057166	100.00
213	Hoboken	34017 1872	0.091030	0.091030	100.00
214	Hoboken	34017 1873	0.026757	0.026757	100.00
215	Hoboken	34017 1881	0.013555	0.013555	100.00
216	Hoboken	34017 1882	0.023552	0.023552	100.00
217	Hoboken	34017 1883	0.026144	0.026144	100.00
218	Hoboken	34017 1891	0.041328	0.041328	100.00
219	Hoboken	34017 1892	0.031350	0.031350	100.00
220	Hoboken	34017 1901	0.027659	0.027659	100.00
221	Hoboken	34017 1902	0.054191	0.054191	100.00
222	Hoboken	34017 1911	0.025952	0.025952	100.00
223	Hoboken	34017 1912	0.030222	0.030222	100.00
224	Hoboken	34017 1921	0.041331	0.041331	100.00
225	Hoboken	34017 1922	0.039310	0.039310	100.00
226	Hoboken	34017 1923	0.025896	0.025896	100.00
227	Hoboken	34017 1931	0.013604	0.013604	100.00
228	Hoboken	34017 1932	0.014609	0.014609	100.00
229	Hoboken	34017 1933	0.026470	0.026470	100.00
230	Hoboken	34017 1941	0.020484	0.020484	100.00
231	Hoboken	34017 1942	0.019836	0.019836	100.00
232	Secaucus	34017 1965	0.732952	0.000001	0.00
233	Secaucus	34017 1973	2.766314	1.552579	56.12
234	Jersey City	34017 9019	1.413632	1.413632	100.00
235	Jersey City	34017 9021	0.076507	0.076507	100.00
236	Jersey City	34017 9022	0.089036	0.089036	100.00
237	Jersey City	34017 12011	0.052004	0.052004	100.00
238	Jersey City	34017 12021	0.085191	0.085191	100.00

239	Jersey City	34017 16011	0.067965	0.067965	100.00
240	Jersey City	34017 16012	0.272827	0.272827	100.00
241	Jersey City	34017 16021	0.130987	0.130987	100.00
242	Jersey City	34017 16022	0.262288	0.262288	100.00
243	Jersey City	34017 41011	0.078729	0.078729	100.00
244	Jersey City	34017 41012	0.062613	0.062613	100.00
245	Jersey City	34017 41021	0.047993	0.047993	100.00
246	Jersey City	34017 41022	0.044003	0.044003	100.00
247	Jersey City	34017 58011	0.080384	0.080384	100.00
248	Jersey City	34017 58012	0.085910	0.085910	100.00
249	Jersey City	34017 58021	4.890227	4.890227	100.00
251	Jersey City	34017 362	0.094903	0.094903	100.00
	Totals:		56.496861	35.072380	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
8	Jersey City	34017 11	0.042025	0.038551	91.73
9	Jersey City	34017 12	0.046303	0.046303	100.00
10	Jersey City	34017 13	0.077944	0.055843	71.64
11	Jersey City	34017 21	0.037881	0.037881	100.00
12	Jersey City	34017 22	0.042582	0.042582	100.00
13	Jersey City	34017 23	0.015928	0.015928	100.00
14	Jersey City	34017 31	0.048298	0.048298	100.00
15	Jersey City	34017 32	0.036128	0.036128	100.00
16	Jersey City	34017 33	0.033747	0.033747	100.00
17	Jersey City	34017 41	0.094182	0.094182	100.00
18	Jersey City	34017 42	0.053367	0.053367	100.00
19	Jersey City	34017 43	0.021044	0.021044	100.00
20	Jersey City	34017 51	0.042716	0.042716	100.00
21	Jersey City	34017 52	0.017864	0.017864	100.00
22	Jersey City	34017 53	0.022666	0.022666	100.00
23	Jersey City	34017 61	0.049508	0.049508	100.00
24	Jersey City	34017 62	0.070286	0.070286	100.00
25	Jersey City	34017 71	0.035702	0.035702	100.00
26	Jersey City	34017 72	0.039618	0.039618	100.00
27	Jersey City	34017 73	0.011704	0.011704	100.00
28	Jersey City	34017 81	0.079342	0.079342	100.00
29	Jersey City	34017 82	0.044958	0.044958	100.00
30	Jersey City	34017 102	0.049609	0.049609	100.00
31	Jersey City	34017 111	0.068453	0.068453	100.00
32	Jersey City	34017 112	0.075340	0.075340	100.00
33	Jersey City	34017 113	0.055863	0.055863	100.00
34	Jersey City	34017 131	0.093597	0.093597	100.00
35	Jersey City	34017 132	0.030388	0.030388	100.00
36	Jersey City	34017 141	0.034209	0.034209	100.00
37	Jersey City	34017 142	0.033492	0.033492	100.00
38	Jersey City	34017 143	0.017848	0.017848	100.00
39	Jersey City	34017 151	0.050114	0.050114	100.00
40	Jersey City	34017 152	0.083958	0.083958	100.00
41	Jersey City	34017 153	0.093321	0.093321	100.00
42	Jersey City	34017 171	0.112371	0.112371	100.00
43	Jersey City	34017 172	0.065158	0.065158	100.00
44	Jersey City	34017 173	0.054242	0.054242	100.00
45	Jersey City	34017 174	0.256479	0.256479	100.00
46	Jersey City	34017 181	0.040036	0.040036	100.00

47	Jersey City	34017	182	0.041528	0.041528	100.00
48	Jersey City	34017	191	0.071223	0.071223	100.00
49	Jersey City	34017	201	0.060748	0.060748	100.00
50	Jersey City	34017	202	0.030332	0.030332	100.00
51	Jersey City	34017	203	0.040569	0.040569	100.00
52	Jersey City	34017	211	0.049562	0.049562	100.00
53	Jersey City	34017	212	0.108107	0.108107	100.00
54	Jersey City	34017	222	0.037988	0.037988	100.00
55	Jersey City	34017	223	0.019850	0.019850	100.00
56	Jersey City	34017	231	0.025478	0.025478	100.00
57	Jersey City	34017	232	0.029567	0.029567	100.00
58	Jersey City	34017	241	0.026310	0.026310	100.00
59	Jersey City	34017	242	0.034958	0.034958	100.00
60	Jersey City	34017	251	0.029344	0.029344	100.00
61	Jersey City	34017	252	0.031499	0.031499	100.00
62	Jersey City	34017	261	0.016489	0.016489	100.00
63	Jersey City	34017	262	0.032775	0.032775	100.00
64	Jersey City	34017	263	0.045003	0.045003	100.00
65	Jersey City	34017	264	0.416142	0.416142	100.00
66	Jersey City	34017	271	0.170546	0.170546	100.00
67	Jersey City	34017	272	0.235074	0.235074	100.00
68	Jersey City	34017	273	0.037045	0.037045	100.00
69	Jersey City	34017	281	0.024373	0.024373	100.00
70	Jersey City	34017	282	0.045882	0.045882	100.00
71	Jersey City	34017	283	0.012136	0.012136	100.00
72	Jersey City	34017	284	0.015464	0.015464	100.00
73	Jersey City	34017	285	0.013127	0.013127	100.00
74	Jersey City	34017	291	0.026714	0.026714	100.00
75	Jersey City	34017	292	0.013894	0.013894	100.00
76	Jersey City	34017	293	0.036665	0.036665	100.00
77	Jersey City	34017	301	0.039647	0.039647	100.00
78	Jersey City	34017	302	0.049133	0.049133	100.00
79	Jersey City	34017	311	0.017940	0.017940	100.00
80	Jersey City	34017	312	0.083825	0.083825	100.00
81	Jersey City	34017	321	0.137606	0.137606	100.00
82	Jersey City	34017	331	0.009099	0.009099	100.00
83	Jersey City	34017	332	0.072592	0.072592	100.00
84	Jersey City	34017	333	0.064403	0.064403	100.00
85	Jersey City	34017	334	0.080330	0.080330	100.00
86	Jersey City	34017	341	0.057659	0.057659	100.00
87	Jersey City	34017	342	0.024412	0.024412	100.00
88	Jersey City	34017	343	0.053799	0.053799	100.00
89	Jersey City	34017	351	0.032612	0.032612	100.00
90	Jersey City	34017	361	0.145053	0.145053	100.00
92	Jersey City	34017	371	0.050214	0.050214	100.00
93	Jersey City	34017	381	0.048697	0.048697	100.00
94	Jersey City	34017	382	0.017040	0.017040	100.00
95	Jersey City	34017	391	0.391058	0.391058	100.00
96	Jersey City	34017	401	0.210982	0.210982	100.00
97	Jersey City	34017	402	0.070251	0.070251	100.00
98	Jersey City	34017	403	0.026326	0.026326	100.00
99	Jersey City	34017	404	0.358014	0.358014	100.00
100	Jersey City	34017	421	0.039979	0.039979	100.00
101	Jersey City	34017	422	0.057119	0.057119	100.00
102	Jersey City	34017	423	0.017411	0.017411	100.00
103	Jersey City	34017	431	0.045820	0.045820	100.00
104	Jersey City	34017	432	0.035132	0.035132	100.00
105	Jersey City	34017	441	0.061441	0.061441	100.00
106	Jersey City	34017	451	0.035751	0.035751	100.00
107	Jersey City	34017	452	0.056601	0.056601	100.00
108	Jersey City	34017	453	0.058452	0.058452	100.00

109	Jersey City	34017	461	0.022218	0.022218	100.00
110	Jersey City	34017	462	0.150043	0.150043	100.00
111	Jersey City	34017	471	0.038468	0.038468	100.00
112	Jersey City	34017	472	0.069657	0.069657	100.00
113	Jersey City	34017	473	0.029558	0.029558	100.00
114	Jersey City	34017	479	2.819429	2.819429	100.00
115	Jersey City	34017	481	0.308642	0.308642	100.00
116	Jersey City	34017	482	0.067226	0.067226	100.00
117	Jersey City	34017	483	0.071009	0.071009	100.00
118	Jersey City	34017	491	0.076207	0.076207	100.00
119	Jersey City	34017	492	0.064554	0.064554	100.00
120	Jersey City	34017	501	0.074577	0.074577	100.00
121	Jersey City	34017	511	0.055714	0.055714	100.00
122	Jersey City	34017	521	0.137899	0.137899	100.00
123	Jersey City	34017	531	0.035310	0.035310	100.00
124	Jersey City	34017	532	0.046096	0.046096	100.00
125	Jersey City	34017	541	1.129591	0.823848	72.93
126	Jersey City	34017	551	0.081529	0.081529	100.00
127	Jersey City	34017	561	0.029880	0.029880	100.00
128	Jersey City	34017	562	0.057373	0.057373	100.00
129	Jersey City	34017	591	0.049785	0.049785	100.00
130	Jersey City	34017	592	0.048348	0.048348	100.00
131	Jersey City	34017	593	0.049098	0.049098	100.00
132	Jersey City	34017	594	0.084850	0.084850	100.00
133	Jersey City	34017	601	0.073915	0.073915	100.00
134	Jersey City	34017	602	0.068675	0.068675	100.00
135	Jersey City	34017	611	0.034493	0.034493	100.00
136	Jersey City	34017	612	0.038683	0.013961	36.09
137	Jersey City	34017	613	0.081136	0.080951	99.77
138	Jersey City	34017	614	0.096464	0.096042	99.56
139	Jersey City	34017	615	0.042628	0.042628	100.00
140	Jersey City	34017	621	0.055648	0.055648	100.00
141	Jersey City	34017	622	0.045808	0.045808	100.00
142	Jersey City	34017	631	0.070424	0.070424	100.00
143	Jersey City	34017	632	0.124690	0.088456	70.94
144	Jersey City	34017	633	0.059312	0.059312	100.00
145	Bayonne	34017	1011	0.680457	0.020115	2.96
165	Kearny	34017	1275	0.673756	0.369916	54.90
166	Kearny	34017	1279	6.990788	0.802475	11.48
170	North Bergen	34017	1491	0.076907	0.000457	0.59
192	Union City	34017	1771	0.019790	0.017656	89.22
193	Union City	34017	1772	0.026867	0.002897	10.78
194	Union City	34017	1781	0.087342	0.059400	68.01
195	Union City	34017	1782	0.032537	0.032506	99.90
196	Union City	34017	1783	0.014538	0.014538	100.00
197	Union City	34017	1784	0.024248	0.012605	51.98
203	Hoboken	34017	1831	0.879027	0.620599	70.60
204	Hoboken	34017	1841	0.099484	0.017553	17.64
205	Hoboken	34017	1842	0.030370	0.030370	100.00
206	Hoboken	34017	1843	0.031715	0.031715	100.00
207	Hoboken	34017	1844	0.060306	0.060306	100.00
208	Hoboken	34017	1851	0.049895	0.049895	100.00
209	Hoboken	34017	1852	0.057225	0.057225	100.00
210	Hoboken	34017	1853	0.027119	0.027119	100.00
211	Hoboken	34017	1861	0.035816	0.035816	100.00
212	Hoboken	34017	1871	0.057166	0.049294	86.23
213	Hoboken	34017	1872	0.091030	0.091030	100.00
214	Hoboken	34017	1873	0.026757	0.026757	100.00
215	Hoboken	34017	1881	0.013555	0.013555	100.00
216	Hoboken	34017	1882	0.023552	0.023552	100.00
217	Hoboken	34017	1883	0.026144	0.026144	100.00

218	Hoboken	34017 1891	0.041328	0.041328	100.00
219	Hoboken	34017 1892	0.031350	0.031350	100.00
220	Hoboken	34017 1901	0.027659	0.027659	100.00
221	Hoboken	34017 1902	0.054191	0.054191	100.00
222	Hoboken	34017 1911	0.025952	0.025952	100.00
223	Hoboken	34017 1912	0.030222	0.030222	100.00
224	Hoboken	34017 1921	0.041331	0.041331	100.00
225	Hoboken	34017 1922	0.039310	0.039310	100.00
226	Hoboken	34017 1923	0.025896	0.025896	100.00
227	Hoboken	34017 1931	0.013604	0.013604	100.00
228	Hoboken	34017 1932	0.014609	0.014609	100.00
229	Hoboken	34017 1933	0.026470	0.026470	100.00
230	Hoboken	34017 1941	0.020484	0.020484	100.00
231	Hoboken	34017 1942	0.019836	0.019836	100.00
233	Secaucus	34017 1973	2.766314	0.035208	1.27
234	Jersey City	34017 9019	1.413632	0.838494	59.31
235	Jersey City	34017 9021	0.076507	0.076507	100.00
236	Jersey City	34017 9022	0.089036	0.089036	100.00
237	Jersey City	34017 12011	0.052004	0.052004	100.00
238	Jersey City	34017 12021	0.085191	0.085191	100.00
239	Jersey City	34017 16011	0.067965	0.067965	100.00
240	Jersey City	34017 16012	0.272827	0.272827	100.00
241	Jersey City	34017 16021	0.130987	0.130987	100.00
242	Jersey City	34017 16022	0.262288	0.262288	100.00
243	Jersey City	34017 41011	0.078729	0.078729	100.00
244	Jersey City	34017 41012	0.062613	0.062613	100.00
245	Jersey City	34017 41021	0.047993	0.047993	100.00
246	Jersey City	34017 41022	0.044003	0.044003	100.00
247	Jersey City	34017 58011	0.080384	0.080384	100.00
248	Jersey City	34017 58012	0.085910	0.085910	100.00
249	Jersey City	34017 58021	4.890227	4.114638	84.14
251	Jersey City	34017 362	0.094903	0.094903	100.00
	Totals:		33.944149	21.826536	

For Radius of 2 Mi., Circle Area = 12.566371

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
24	Jersey City	34017 62	0.070286	0.000622	0.88
26	Jersey City	34017 72	0.039618	0.001207	3.05
28	Jersey City	34017 81	0.079342	0.015626	19.69
29	Jersey City	34017 82	0.044958	0.018952	42.16
30	Jersey City	34017 102	0.049609	0.000410	0.83
31	Jersey City	34017 111	0.068453	0.051877	75.79
32	Jersey City	34017 112	0.075340	0.073582	97.67
33	Jersey City	34017 113	0.055863	0.055863	100.00
34	Jersey City	34017 131	0.093597	0.093597	100.00
35	Jersey City	34017 132	0.030388	0.030388	100.00
36	Jersey City	34017 141	0.034209	0.034209	100.00
37	Jersey City	34017 142	0.033492	0.033492	100.00
38	Jersey City	34017 143	0.017848	0.017848	100.00
39	Jersey City	34017 151	0.050114	0.050114	100.00
40	Jersey City	34017 152	0.083958	0.083958	100.00
41	Jersey City	34017 153	0.093321	0.093321	100.00
42	Jersey City	34017 171	0.112371	0.031133	27.71
43	Jersey City	34017 172	0.065158	0.003799	5.83
44	Jersey City	34017 173	0.054242	0.051209	94.41

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45	Jersey City	34017 174	0.256479	0.085225	33.23
46	Jersey City	34017 181	0.040036	0.040036	100.00
47	Jersey City	34017 182	0.041528	0.041528	100.00
48	Jersey City	34017 191	0.071223	0.071223	100.00
49	Jersey City	34017 201	0.060748	0.060748	100.00
50	Jersey City	34017 202	0.030332	0.030332	100.00
51	Jersey City	34017 203	0.040569	0.040569	100.00
52	Jersey City	34017 211	0.049562	0.049562	100.00
53	Jersey City	34017 212	0.108107	0.108107	100.00
54	Jersey City	34017 222	0.037988	0.037988	100.00
55	Jersey City	34017 223	0.019850	0.019850	100.00
56	Jersey City	34017 231	0.025478	0.025478	100.00
57	Jersey City	34017 232	0.029567	0.029567	100.00
58	Jersey City	34017 241	0.026310	0.026310	100.00
59	Jersey City	34017 242	0.034958	0.034958	100.00
60	Jersey City	34017 251	0.029344	0.029344	100.00
61	Jersey City	34017 252	0.031499	0.031499	100.00
62	Jersey City	34017 261	0.016489	0.016489	100.00
63	Jersey City	34017 262	0.032775	0.032775	100.00
64	Jersey City	34017 263	0.045003	0.045003	100.00
65	Jersey City	34017 264	0.416142	0.416142	100.00
66	Jersey City	34017 271	0.170546	0.152635	89.50
67	Jersey City	34017 272	0.235074	0.033213	14.13
68	Jersey City	34017 273	0.037045	0.037045	100.00
69	Jersey City	34017 281	0.024373	0.024373	100.00
70	Jersey City	34017 282	0.045882	0.045882	100.00
71	Jersey City	34017 283	0.012136	0.012136	100.00
72	Jersey City	34017 284	0.015464	0.015464	100.00
73	Jersey City	34017 285	0.013127	0.013127	100.00
74	Jersey City	34017 291	0.026714	0.026714	100.00
75	Jersey City	34017 292	0.013894	0.013894	100.00
76	Jersey City	34017 293	0.036665	0.036665	100.00
77	Jersey City	34017 301	0.039647	0.039647	100.00
78	Jersey City	34017 302	0.049133	0.049133	100.00
79	Jersey City	34017 311	0.017940	0.017940	100.00
80	Jersey City	34017 312	0.083825	0.083825	100.00
81	Jersey City	34017 321	0.137606	0.137606	100.00
82	Jersey City	34017 331	0.009099	0.009099	100.00
83	Jersey City	34017 332	0.072592	0.072592	100.00
84	Jersey City	34017 333	0.064403	0.064403	100.00
85	Jersey City	34017 334	0.080330	0.080330	100.00
86	Jersey City	34017 341	0.057659	0.057659	100.00
87	Jersey City	34017 342	0.024412	0.024412	100.00
88	Jersey City	34017 343	0.053799	0.053799	100.00
89	Jersey City	34017 351	0.032612	0.032612	100.00
90	Jersey City	34017 361	0.145053	0.145053	100.00
92	Jersey City	34017 371	0.050214	0.050214	100.00
93	Jersey City	34017 381	0.048697	0.048697	100.00
94	Jersey City	34017 382	0.017040	0.017040	100.00
95	Jersey City	34017 391	0.391058	0.391058	100.00
96	Jersey City	34017 401	0.210982	0.179406	85.03
97	Jersey City	34017 402	0.070251	0.070251	100.00
98	Jersey City	34017 403	0.026326	0.013608	51.69
99	Jersey City	34017 404	0.358014	0.019156	5.35
100	Jersey City	34017 421	0.039979	0.039979	100.00
101	Jersey City	34017 422	0.057119	0.057119	100.00
102	Jersey City	34017 423	0.017411	0.017411	100.00
103	Jersey City	34017 431	0.045820	0.045820	100.00
104	Jersey City	34017 432	0.035132	0.035132	100.00
105	Jersey City	34017 441	0.061441	0.061441	100.00
106	Jersey City	34017 451	0.035751	0.035751	100.00

Summit Metals Inc.
Jersey City, NJ

107	Jersey City	34017 452	0.056601	0.056601	100.00
108	Jersey City	34017 453	0.058452	0.058452	100.00
109	Jersey City	34017 461	0.022218	0.022218	100.00
110	Jersey City	34017 462	0.150043	0.150043	100.00
111	Jersey City	34017 471	0.038468	0.038468	100.00
112	Jersey City	34017 472	0.069657	0.069657	100.00
113	Jersey City	34017 473	0.029558	0.029558	100.00
114	Jersey City	34017 479	2.819429	2.795709	99.16
115	Jersey City	34017 481	0.308642	0.037821	12.25
116	Jersey City	34017 482	0.067226	0.023527	35.00
117	Jersey City	34017 483	0.071009	0.013440	18.93
118	Jersey City	34017 491	0.076207	0.076207	100.00
119	Jersey City	34017 492	0.064554	0.064554	100.00
120	Jersey City	34017 501	0.074577	0.074577	100.00
121	Jersey City	34017 511	0.055714	0.055714	100.00
122	Jersey City	34017 521	0.137899	0.126823	91.97
123	Jersey City	34017 531	0.035310	0.035310	100.00
124	Jersey City	34017 532	0.046096	0.046096	100.00
125	Jersey City	34017 541	1.129591	0.047939	4.24
126	Jersey City	34017 551	0.081529	0.081529	100.00
127	Jersey City	34017 561	0.029880	0.010249	34.30
128	Jersey City	34017 562	0.057373	0.000255	0.44
133	Jersey City	34017 601	0.073915	0.003923	5.31
203	Hoboken	34017 1831	0.879027	0.107978	12.28
217	Hoboken	34017 1883	0.026144	0.001480	5.66
221	Hoboken	34017 1902	0.054191	0.008789	16.22
222	Hoboken	34017 1911	0.025952	0.019934	76.81
223	Hoboken	34017 1912	0.030222	0.027810	92.02
224	Hoboken	34017 1921	0.041331	0.041331	100.00
225	Hoboken	34017 1922	0.039310	0.039310	100.00
226	Hoboken	34017 1923	0.025896	0.025896	100.00
227	Hoboken	34017 1931	0.013604	0.013604	100.00
228	Hoboken	34017 1932	0.014609	0.014609	100.00
229	Hoboken	34017 1933	0.026470	0.026173	98.88
231	Hoboken	34017 1942	0.019836	0.007140	35.99
234	Jersey City	34017 9019	1.413632	0.004942	0.35
235	Jersey City	34017 9021	0.076507	0.052652	68.82
236	Jersey City	34017 9022	0.089036	0.089036	100.00
237	Jersey City	34017 12011	0.052004	0.052004	100.00
238	Jersey City	34017 12021	0.085191	0.085191	100.00
239	Jersey City	34017 16011	0.067965	0.067965	100.00
240	Jersey City	34017 16012	0.272827	0.272827	100.00
241	Jersey City	34017 16021	0.130987	0.130987	100.00
242	Jersey City	34017 16022	0.262288	0.262288	100.00
243	Jersey City	34017 41011	0.078729	0.078729	100.00
244	Jersey City	34017 41012	0.062613	0.062613	100.00
245	Jersey City	34017 41021	0.047993	0.047993	100.00
246	Jersey City	34017 41022	0.044003	0.044003	100.00
247	Jersey City	34017 58011	0.080384	0.072003	89.57
248	Jersey City	34017 58012	0.085910	0.074687	86.94
249	Jersey City	34017 58021	4.890227	1.267394	25.92
251	Jersey City	34017 362	0.094903	0.094903	100.00
	Totals:		20.146156	11.388221	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius

Summit Metals Inc.
Jersey City, NJ

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
40	Jersey City	34017 152	0.083958	0.017152	20.43
52	Jersey City	34017 211	0.049562	0.011971	24.15
53	Jersey City	34017 212	0.108107	0.044946	41.58
54	Jersey City	34017 222	0.037988	0.037988	100.00
55	Jersey City	34017 223	0.019850	0.019850	100.00
56	Jersey City	34017 231	0.025478	0.025478	100.00
57	Jersey City	34017 232	0.029567	0.029567	100.00
58	Jersey City	34017 241	0.026310	0.006567	24.96
59	Jersey City	34017 242	0.034958	0.034958	100.00
60	Jersey City	34017 251	0.029344	0.029344	100.00
61	Jersey City	34017 252	0.031499	0.031499	100.00
62	Jersey City	34017 261	0.016489	0.016489	100.00
63	Jersey City	34017 262	0.032775	0.032723	99.84
64	Jersey City	34017 263	0.045003	0.045003	100.00
65	Jersey City	34017 264	0.416142	0.076085	18.28
77	Jersey City	34017 301	0.039647	0.004720	11.91
78	Jersey City	34017 302	0.049133	0.016001	32.57
79	Jersey City	34017 311	0.017940	0.009140	50.95
80	Jersey City	34017 312	0.083825	0.081662	97.42
81	Jersey City	34017 321	0.137606	0.129333	93.99
82	Jersey City	34017 331	0.009099	0.009099	100.00
83	Jersey City	34017 332	0.072592	0.072592	100.00
84	Jersey City	34017 333	0.064403	0.064403	100.00
85	Jersey City	34017 334	0.080330	0.080330	100.00
86	Jersey City	34017 341	0.057659	0.057659	100.00
87	Jersey City	34017 342	0.024412	0.024412	100.00
88	Jersey City	34017 343	0.053799	0.053799	100.00
89	Jersey City	34017 351	0.032612	0.032612	100.00
90	Jersey City	34017 361	0.145053	0.145053	100.00
92	Jersey City	34017 371	0.050214	0.050214	100.00
93	Jersey City	34017 381	0.048697	0.048697	100.00
94	Jersey City	34017 382	0.017040	0.017040	100.00
95	Jersey City	34017 391	0.391058	0.192112	49.13
103	Jersey City	34017 431	0.045820	0.044548	97.22
104	Jersey City	34017 432	0.035132	0.000542	1.54
106	Jersey City	34017 451	0.035751	0.032327	90.42
107	Jersey City	34017 452	0.056601	0.011912	21.05
108	Jersey City	34017 453	0.058452	0.003223	5.51
109	Jersey City	34017 461	0.022218	0.022218	100.00
110	Jersey City	34017 462	0.150043	0.110678	73.76
111	Jersey City	34017 471	0.038468	0.038468	100.00
112	Jersey City	34017 472	0.069657	0.069657	100.00
113	Jersey City	34017 473	0.029558	0.029558	100.00
114	Jersey City	34017 479	2.819429	1.101096	39.05
238	Jersey City	34017 12021	0.085191	0.001713	2.01
241	Jersey City	34017 16021	0.130987	0.009961	7.60
245	Jersey City	34017 41021	0.047993	0.019457	40.54
246	Jersey City	34017 41022	0.044003	0.002834	6.44
251	Jersey City	34017 362	0.094903	0.094903	100.00
	Totals:		6.126355	3.141593	

For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
81	Jersey City	34017 321	0.137606	0.019504	14.17

Summit Metals Inc.
Jersey City, NJ

83	Jersey City	34017 332	0.072592	0.010917	15.04
84	Jersey City	34017 333	0.064403	0.033907	52.65
85	Jersey City	34017 334	0.080330	0.021037	26.19
86	Jersey City	34017 341	0.057659	0.001327	2.30
87	Jersey City	34017 342	0.024412	0.020796	85.18
88	Jersey City	34017 343	0.053799	0.053337	99.14
89	Jersey City	34017 351	0.032612	0.026623	81.64
90	Jersey City	34017 361	0.145053	0.145053	100.00
92	Jersey City	34017 371	0.050214	0.023556	46.91
93	Jersey City	34017 381	0.048697	0.000063	0.13
95	Jersey City	34017 391	0.391058	0.012445	3.18
109	Jersey City	34017 461	0.022218	0.006595	29.68
111	Jersey City	34017 471	0.038468	0.038468	100.00
112	Jersey City	34017 472	0.069657	0.068861	98.86
113	Jersey City	34017 473	0.029558	0.006546	22.15
114	Jersey City	34017 479	2.819429	0.203138	7.20
251	Jersey City	34017 362	0.094903	0.094903	100.00
	Totals:		4.232670	0.787077	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
88	Jersey City	34017 343	0.053799	0.011856	22.04
90	Jersey City	34017 361	0.145053	0.046460	32.03
111	Jersey City	34017 471	0.038468	0.024037	62.48
112	Jersey City	34017 472	0.069657	0.000243	0.35
114	Jersey City	34017 479	2.819429	0.036800	1.31
251	Jersey City	34017 362	0.094903	0.076953	81.09
	Totals:		3.221311	0.196350	

Summit Metals Inc.
Jersey City, NJ

========== Site Data ==========

Population:	323386.66
Households:	133379.72
Drilled Wells:	61.85
Dug Wells:	35.00
Other Water Sources:	114.79

========== Partial (RING) data ==========

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	59127.97
Households:	24228.73
Drilled Wells:	11.85
Dug Wells:	3.00
Other Wells:	9.19

** Population On Private Wells: 36.24

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	109682.20
Households:	45718.47
Drilled Wells:	2.81
Dug Wells:	3.91
Other Wells:	46.20

** Population On Private Wells: 16.12

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	113209.56
Households:	46172.47
Drilled Wells:	47.19
Dug Wells:	28.09
Other Wells:	33.75

** Population On Private Wells: 184.58

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	33360.50
Households:	13787.11
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	19.68

** Population On Private Wells: 0.00

Summit Metals Inc.
Jersey City, NJ

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	7206.13
Households:	3041.35
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	5.96

** Population On Private Wells: 0.00

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	800.29
Households:	431.59
Drilled Wells:	0.00
Dug Wells:	0.00
Other Wells:	0.00

** Population On Private Wells: 0.00

** Total Population On Private Wells: 236.94

REFERENCE NO. 20

SURFACE WATER INTAKE LOCATIONS
BUREAU OF SAFE DRINKING WATER

Prepared by: Michael Mariano

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
0102001	ATLANTIC CITY WATER DEPARTMENT	609-345-3315	ABSECON	DOUGHTY POND - South tip - Mays Landing Rd. & Mill Rd.
0238001	HACKENSACK WATER DEPARTMENT	201-767-9300	PARAMUS	SADDLE RIVER - South of intersection of Paramus Rd. & Midland Ave.
			ORADELL	HACKENSACK RIVER - At Martin Ave.
			NORTHVALE	SPARK HILL CREEK - Northwest of intersection of Pegasus Ave. & Hill Terr.
			ORADELL	LONG SWAMP BROOK - At Martin Ave.
0305001	BURLINGTON CITY WATER DEPARTMENT	609-386-0307	EAST BURLINGTON	DELAWARE RIVER - 1/4 mile north of Assiscunk Creek
			BURLINGTON ISLAND	BURLINGTON ISLAND LAKE
0325001	FORT DIX	609-562-5040		RANCOCAS CREEK
1613001	NJDWSC	201-575-0225	POMPTON LAKES	RAMAPO RIVER - At Pompton Lake (pump to Wanaque Res.)
			WANAQUE	WANAQUE RESERVOIR - Ringwood Ave & Oricchio Ave
0717001	CITY OF ORANGE	201-762-6000	SOUTH ORANGE	ORANGE RESERVOIR - On West branch of Rahway River 40 ft upstream from dam

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
0712001	NJ AMERICAN NORTHERN DISTRICT	201-376-8800	MILLBURN	PASSAIC RIVER - At Kennedy Parkway
			SHORT HILLS	CANOE BROOK - North of Route 24
			CALDWELL	POMPTON RIVER - At Bridges Rd.
0714001	NEWARK WATER DEPT	201-256-4965		PEQUANNOCK WATER SHED
0906001	JERSEY CITY WATER DEPARTMENT	201-547-4390	BOONTON	BOONTON RESERVOIR - 200 yds northwest of Washington St Bridge
			ROCKAWAY	SPLIT ROCK RESERVOIR - Empties into Boonton Res. via Rockaway River
1017001	LAMBERTVILLE WATER DEPARTMENT	609-397-0526	LAMBERTVILLE	SWAN CREEK RESERVOIR EAST
			LAMBERTVILLE	SWAN CREEK RESERVOIR WEST
			LAMBERTVILLE	DELAWARE-RARITAN CANAL - At Swan St. (Emergency)
1111001	CITY OF TRENTON	609-989-3208	TRENTON	DELAWARE RIVER - At Rt 29 north of Calhoun St. Bridge
1216001	PERTH AMBOY	908-826-0290	OLD BRIDGE	TENNENTS POND - At Waterworks Rd.
1225001	MIDDLESEX WATER CO	908-634-1500	EDISON	DELAWARE-RARITAN CANAL & MILLSTONE RIVER - At Rt 18

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1214001	NEW BRUNSWICK WATER DEPARTMENT	908-745-5060	NEW BRUNSWICK	LAWRENCE BROOK - At Burnet S St.
			NEW BRUNSWICK	DELAWARE-RARITAN CANAL - At George St & College Ave
1214001	NORTH BRUNSWICK	908-247-0922	FRANKLIN TWP	DELAWARE-RARITAN CANAL - At Suydan Ave.
1219001	SAYERVILLE	908-390-7000	OLD BRIDGE	SOUTH RIVER - At Main St North of Rt 18
1352005	NEW JERSEY WATER SUPPLY AUTH.		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of Garden State Parkway (Pump to Manasquan Resevior)
1345001	NJ AMERICAN - MONMOUTH		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of GSP (Pump to Glendola Reservoir)
			NEPTUNE TWP	SHARK RIVER - Off Corlies Ave. 2000' North of GSP
			NEPTUNE TWP	JUMPING BROOK - At Greensgrove & Corlies Aves
			LINCROFT	SWIMMING RIVER RESERVOIR - 1000' West of Swimming Riv.
1326004	MATCHAPONIX		MANALAPAN	MATCHAPONIX BROOK - At Wilson Ave.
1401001	TOWN OF BOONTON	201-299-7740	MONTVILLE	TAYLORTOWN RESERVOIR - At Taylortown Rd.

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1403001	BUTLER WATER DEPT	201-838-7200	BUTLER	KIKEOUT RESERVOIR - At Resevior Rd.
1424001	SOUTH EAST MORRIS COUNTY	201-538-5600	MENDHAM	CLYDE POTTS RESERVOIR - Cold Hill Rd & Woodland Rd
1506001	BRICK TWP	908-458-7000		METEDECONK RIVER
1603001	HALEDON WATER DEPT		HALEDON	HALEDON RESERVOIR - Lower Basin pump station at Belmont Ave.
1605002	PASSAIC VALLEY WATER COMMISSION	201-256-1566	WAYNE	POMPTON RIVER - At Confluence of Ramapo & Pequannock Rivers
			TOTOWA	PASSAIC RIVER - At Union Blvd.
1708300	E.I. DUPONT PENNSVILLE	609-299-5000		SALEM CANAL
1712001	SALEM WATER DEPT	609-935-0350	CLINTON TWP	LAUREL LAKE - At Waterworks Rd & Lake Ave.
			ALLOWAY TWP	ELKINTON MILL POND - Waterworks Rd. 3 miles east of Laurel Lake (Seasonal)
1903001	BRANCHVILLE WATER DEPARTMENT	201-948-6463	FRANKFORD TWP	BRANCHVILLE RESERVOIR - 7300' northeast of Mattison Ave & Mattison School Rd.
1906002	FRANKLIN WATER DEPT	201-827-7060	FRANKLIN BOROUGH	FRANKLIN POND - Franklin Ave. Across from plant
1915001	NEWTON WATER DEPT	201-383-3521	SPARTA TWP	MORRIS LAKE

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION
1921001	SUSSEX WATER DEPT	201-967-5622	WANTAGE TWP	COLESVILLE RESERVOIR - At Brink Rd. 400' west of Rt. 23
2013001	RAHWAY WATER DEPT	201-388-0086	RAHWAY	RAHWAY RIVER - At pump station off Valley Rd & Lambert St.
2004002	ELIZABETHTOWN WATER COMPANY	201-345-4444	BRIDGEWATER TWP	RARITAN & MILLSTONE RIVERS - At confluence
2108001	HACKETTSTOWN MUA	201-852-3622	DRAKESTOWN	MINE HILL RESERVOIR - Off Mine Hill Rd.
			DRAKESTOWN	BURD RESERVOIR - Off Reservoir Rd. Southeast of

REFERENCE NO. 21

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003-313

Date: December 16, 1994 Time: 1:27 AM [] PM [X]

Call

To: James Gaffney (609) 633 - 1179 Telephone No.

Affiliation: NJDEP - Bureau of Water Supply Planning

Malcolm Pirnie Staff: Gary Bielen GB (609) 860-0100 Telephone No.

Summary of Conversation:

Wellhead Protection Areas are not yet delineated in the state of New Jersey.

REFERENCE NO. 22

MALCOLM PIRNIE, INC.	PROJECT NOTES

To: File	**Date:** March 31, 1995
From: Lilli Gonzalez	**Project #:** 8003-411
Subject: Drinking Water Sources within four miles	**Site Name:** Summit Metals Inc.

The following telecons describe water sources for the population within four miles of the site. There are no people currently using groundwater as a drinking water source within four miles of the site. All of the communities within four miles receive their drinking water from reservoirs greater than four miles from the site.

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003-304

Date: 2/18/94 Time: 2:30 AM [] PM [x]

Outgoing Call

To: Larry Prins 201-547-4456 Telephone No.

Affiliation: Jersey City Water Department

Malcolm Pirnie Staff: Gary Bielen (609) 860-0100 Telephone No.

Summary of Conversation:

Jersey City receives their drinking water from the Boonton Reservoir in upstate New Jersey and the reservoir serves 50,000 customers in Jersey City, Hoboken, and North Arlington.

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003-304

Date: 2/18/94 Time: 11:30 AM [X] PM []

Outgoing Call

To: Mr. Tencza 201-858-6172 Telephone No.

Affiliation: Bayonne Water Department

Malcolm Pirnie Staff: Gary Bielen (609) 860-0100 Telephone No.

Summary of Conversation:

The City of Bayonne (62,000 people) receives their drinking water from the Wanaque reservoir in northern New Jersey in the Town of Wanaque.

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003-304

Date: 2/18/94 Time: 3:30 AM [] PM [x]

Outgoing Call

To: James Covey, P.E. 518-458-6731
Telephone No.

Affiliation: NYSDOH - Bureau of Public Water Supply Protection

Malcolm Pirnie Staff: Gary Bielen (609) 860-0100
Telephone No.

Summary of Conversation:

Mr. Covey stated that there are no community water supply systems on Staten Island. Staten Island receives all of its drinking water from the New York City Upland Reservoir system in upstate New York (Catskill). The five boroughs (Bronx, Brooklyn, Manhattan, Staten Island and Queens) all receive their drinking water from the New York City upland system. In the southeast portion of the Queens, they get their drinking water from approximately sixty groundwater wells that are owned by a private water company, Jamaica Water Supply Company.

ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003202

Date: June 22, 1993 Time: 11:41 AM [x] PM []

Outgoing Call

To: Town Clerk (201) 991-2700 Telephone No.

Affiliation: Kearny, N.J. Water Department

Malcolm Pirnie Staff: **Joseph Guerriero** (914) 641-2699 Telephone No.

Summary of Conversation:

The Town Clerk stated that Kearny, N.J. receives its water supply from the Wanaque Reservoir, located in Wanaque, N.J.

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ARCS II CONTRACT 68-W9-0051
MALCOLM PIRNIE, INC.
RECORD OF TELEPHONE CONVERSATION/AGREEMENT

File No. 8003202

Date: June 22,1993 Time: 11:35 AM [x] PM []

Outgoing Call

To: Town Clerk (201) 319-6022
Telephone No.

Affiliation: Weekhawen, NJ, Town Clerk

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Summary of Conversation:

The Weekhawen, NJ Town Clerk indicated that Weekhawen was supplied by the Hackensack Water Company.

REFERENCE NO. 23

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration
Bureau of Marine Fisheries
Bureau of Shellfisheries

October, 1988

New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

by William Figley

and

The Shellfish Resources of Raritan Bay and Sandy Hook Bay

by Thomas McCloy

Charts by Barry Preim

New Jersey Department of Environmental Protection
Division of Fish, Game and Wildlife
Marine Fisheries Administration

Financial assistance for this report was furnished by the Commercial Fisheries Research and Development Act (P.L. 88-309) administered by the National Marine Fisheries Service and from the Coastal Zone Management Act.

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Trenton, NJ 08625

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James Joseph, Leo Jennings, Thomas Baum, Jr. and Paul Kraus, all of the Bureau of Shellfisheries, participated in various phases of sampling and data analysis. Barry Preim of the Bureau of Marine Fisheries was responsible for the preparation of the shellfish resource charts.

Most of the credit for this publication lies with the nearly 200 recreational and commercial fishermen who provided the information contained within this report. Without their help and knowledge, this work would not exist. They are listed by embayment.

RARITAN BAY AND SANDY HOOK BAY

Recreational

J. Adams
E. Aras
F. Azzollini
D. Bennett
R. Blashfield
W. Bontemps
T. Brown
S. Callari
D. Christensen
A. Cimilluca
E. Freer
J. Freidman
R. Giessuebel
G. Graf
J. Graf
M. Grecco
S. Green
J. Gould
H. Hagaman
A. Hilliard
V. Hockenbury
G. Hoffman
R. Jakub
R. Kantor
K. Kaulfers
K. Kjellberg
J. Klaczkiewicz
J. Krajewski
R. Leyner
J. Lipton
P. Maresca
T. Matulewicz
M. McLean
F. Morenz
W. Morse
S. Muratore
L. Nvves-Vais
T. Oberlerton
L. Palmer
J. Palumbo
R. Perrini
R. Pfluger
S. Radossi
H. Rauer, Jr.
O. Ressler
J. Ross
M. Ross
R. Semkewyc
L. Silver
M. Siwiec
W. Spiess, Jr.
M. Vander Zwan
R. Van Reed
J. Vena
R. Wallenstein
R. Walsh
J. Wilkinson
J. Wood

Commercial

K. Baumle
D. Bigelow
W. Braun
F. Brink
H. Brink
J. Caplinger
R. Caplinger
E. Fisler
E. Fisler, III
R. Fisler, Jr.
K. Ignotis
A. Klein
L. Layton
E. Mosinak
D. Neslon
G. Panko
O. Schnoor
A. Thorstensen
J. White

DELAWARE BAY

Recreational

F. Ascoli
P. Barrett
S. Bent
R. Bobo
M. Bonino
F. Callio
K. Calloway
G. Carlson
J. Clark
H. Clifford
J. Cobb
F. Couch
R. Cossaboon
C. Depriest
D. Douglass
A. Dulinski
J. Eagan
E. Gandy
L. Haubois
R. Heineman
A. Heizman
L. Hughes
D. Imbrihco
E. King
R. Knisell
L. Lapin
J. Lazarich
T. Mahoney
R. McDowell
J. Meadows
N. Menaco
J. Monaghan
J. Moore, III
S. Norton
D. Parsons
W. Powell
A. Quincy
S. Rea
G. Rossi
H. Schroeder
B. Sereni
J. Solley
F. Speigel, Jr.
B. Sterrhele
K. Takeda
S. Tompson
J. Wallace
D. Weber

Commercial

L. Abrams
E. Anderson
J. Bailey, Jr.
S. Blizzaid
C. Bragg
G. Carlson
C. Clark
S. Crane
E. Dawson
L. Donelson, Jr.
A. Dowe
G. Downs
F. Franklin
N. Franklin
C. Givens
C. Goldmark
D. Harbison
P. Hank
J. Hayes
H. Henderson, III
N. Hoffman
P. Homick
C. Jack
R. James
G. Kumor
R. Laudeman
R. Malinowski
F. McBride
B. Palmer
L. Perry, Sr.
J. Phrampor
L. Peterson
S. Riley
J. Rust
L. Streeper
L. Veach
C. Walzer
C. Wettstein
G. White
T. White

New Jersey's Recreational and Commercial Fishing Grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay

INTRODUCTION

New Jersey's two largest embayments, Raritan Bay and Sandy Hook Bay in the north and Delaware Bay at the southern end of the state, contain important fishing grounds for a large number of recreational and commercial fishermen. In addition to providing important fisheries, there are other uses of the resources of these bays. Shipping requires the maintenance of deepwater channels and the disposal of massive quantities of dredge spoil. The mining industry has an interest in sand deposits for fill material and building aggregates. Various industries and municipalities use the bay water for treatment and dilution of wastes and for cooling water. Unfortunately, many of these uses often adversely affect the fish and shellfish resources, commonly referred to as the living marine resources, by degrading their living space and thereby reducing their populations. Also, because of our carelessness in disposing of toxic chemicals, we contaminate many seafood species. These and other uses of our coastal waters can directly affect fishermen by disrupting or preventing fishing operations.

Unfortunately, during the past, exploitation of the physical resources of these large embayments has been done with little thought given to the fishery resources or the fishermen who depend upon them. Now, however, all proposed resource development activities are subject to the process of environmental review. This process has greatly reduced many of the negative effects.

Information regarding the location of fishing grounds is needed to protect both fish and shellfish resources and the fishermen that derive their recreation or livelihood from them. The recreational and commercial fishing grounds of New Jersey's ocean waters were described in "New Jersey's Recreational and Commercial Ocean Fishing Grounds" (Technical Series 81-1). This report is a continuation of our mapping efforts and presents the fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay.

METHODS

The fishing grounds of Raritan Bay, Sandy Hook Bay and Delaware Bay were determined through a survey of commercial and recreational fishermen from New Jersey and Delaware. Although some fishermen were contacted in person, most were mailed survey forms and charts. Our list of commercial fishermen was derived from commercial fishing licenses. Party and charter boat captains were selected from our statewide list. Names of other recreational fishermen were obtained from fishing clubs, bait shops and the suggestions of other anglers.

Fishermen were requested to delineate specific areas they fished during the past five years by each type of fishing gear, in the case of commercial fishermen, and by species, in the case of recreational fishermen. The completed charts were then analyzed in two ways. First, the irregular outlines of delineated fishing grounds were transferred to master charts, one for each species or gear type. When completed, these charts depicted the entire area fished by species or gear type for all the fishermen surveyed. Survey charts were then analyzed quantitatively by overlaying each chart with a grid and tallying each grid block that was covered by any portion of a delineated fishing ground. The grid size was 1.25 minutes square (latitude) for Raritan Bay and Sandy Hook Bay and 2.5 minutes square (latitude) for Delaware Bay. Separate tallies were kept for each type of gear and species. The highest scoring grid blocks were designated as primary fishing grounds for each particular gear or species, and the lower scoring blocks were designated secondary fishing grounds. However, in preparing the final composite charts, only the irregularly-shaped outlines obtained from the first transfer were plotted. This was to insure that only that portion of a grid block that was actually fished was plotted.

It should be noted that these charts show the fishing grounds and not the distribution of each species. Fishing grounds represent only a portion of the geographic range of a species. Their extent is often limited by factors such as the density of fish, the suitability of an area for fishing, depth, regulations, pollution and distance from port. Furthermore, the charts depict only primary and secondary fishing grounds, areas where the majority of recreational and commercial fishing occurs; they do not include areas where rare or infrequent catches are made or where a species is taken as a bycatch of another species. In addition, fishing ground

boundaries are not permanent. Fishing effort adapts to changes in fish distribution and the location of grounds can vary from year to year. The information contained on these charts must therefore be considered in the context of time. Also, it must be recognized that although the survey included a large and diverse sample of New Jersey's recreational and commercial fishermen, not all fishermen were interviewed. Therefore, some actively fished areas may have been omitted.

The charts of Raritan Bay and Sandy Hook Bay indicate the fishing grounds of only New Jersey fishermen. The charts of Delaware Bay depict the fishing grounds of fishermen from both New Jersey and Delaware. Commercial fishing activities in Delaware Bay are greatly influenced by the state boundary line, which generally follows the shipping channel near the middle of the bay. Commercial fishermen are, for the most part, restricted by licenses and regulations to their respective sides of the bay. Thus, the commercial fishing grounds of New Jersey and Delaware fishermen depicted on the charts are exclusive. In the case of recreational fisheries, there are no area restrictions and anglers from both states mix over much of the fishing grounds. The areas on the charts labelled "Delaware Only" are fished only by Delaware anglers, because they lie too far across the bay for New Jersey anglers to reach.

PHYSICAL CHARACTERISTICS OF THE BAYS

Raritan Bay and Sandy Hook Bay

Raritan Bay and Sandy Hook Bay is a triangular-shaped embayment measuring nine by twelve miles and has a surface area of 109 square miles. It receives freshwater inflow from several drainage systems including the Hudson, Passaic and Hackensack Rivers to the north, the Raritan River to the west and the Navesink River to the south. The Bay system is divided between New York and New Jersey. Two shipping channels lead into the bays. Starting at the seaward edge, Ambrose Channel cuts northward under the Verazano Narrows Bridge to New York Harbor and the Hudson River. Sandy Hook Channel enters at the tip of Sandy Hook and proceeds westward to Perth Amboy, the Arthur Kill and Raritan River. Chapel Hill Channel joins these two main channels in a north-south direction. Except for the shipping channels, most of Raritan Bay and Sandy Hook Bay is relatively shallow, usually less than 20 feet in depth. Tides enter and leave the bay in a counter-clockwise gyre. Flood tides bring higher salinity ocean water in through Ambrose Channel that flows along the New York shores. Ebb tides drain less saline waters from the New Jersey shore out to the ocean through Sandy Hook channel. The volume of the tidal prism is 9.2 billion cubic feet and the mean tidal range is 5.5 feet.

The shores of Raritan Bay and Sandy Hook Bay and the numerous rivers, streams and tidal creeks that flow into them are the most highly industrialized and urbanized in New Jersey. Industrial and sewage effluents and storm-water run-off have resulted in severe water pollution and fish contamination, particularly in the northern drainage systems. Fortunately, public efforts and laws to reduce pollution are leading to improved water quality. As a result, blue crabs, striped bass, bluefish and other marine organisms are returning to many areas, such as Newark Bay and the Hackensack River, where they have been absent for decades.

Delaware Bay

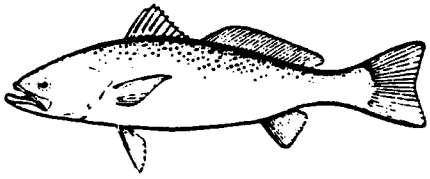
Delaware Bay is 46.7 miles long and has an average width of 15.3 miles. It has a surface area of 720 square miles and a volume of 4.7 trillion gallons. Although the major source of freshwater is the Delaware River, scores of tributaries, from narrow tidal creeks to small rivers, enter from both the Delaware and New Jersey shores. Each day, an average of 13 billion gallons of freshwater reach the bay from the Delaware River and the various tributaries. Tidal influence is much greater, however, with over a trillion gallons of seawater entering the bay daily. Tidal circulation follows a counter-clockwise pattern. Entering seawater tends to follow the New Jersey shore and tidal water mixed with freshwater tends to exit along the Delaware shore. For this reason, the Delaware side exhibits much greater variations in salinity. Tides extend from the mouth of the bay, where the mean range is 4.1 feet, to as far upstream as Trenton Falls, where the mean range is 6.8 feet.

About 80 percent of Delaware Bay is less than 30 feet deep. The shipping channel, with depths of 40 to 60 feet, runs close to the center of the bay and is bordered on each side by shoals only 6 to 20 feet deep. A deep-water area on the Delaware side of the channel near the mouth of the bay serves as a ship anchorage, with depths of 60 feet and more. Wide shoals less than 12 feet in depth border both the New Jersey and Delaware shores. One large shoal extends from Egg Island Point to Cape May Point. Another set of shoals, called The Rips, extends out from Cape May Point partially across the mouth of the Bay.

Vast stretches of tidal marsh border Delaware Bay in sharp contrast to the urbanized shores of Raritan Bay and Sandy Hook Bay. Unlike the northern part of the state, there has been much less industrial or residential development along Delaware Bay.

A 1960 study by the University of Delaware indicated that 138 species of fish can be found in the bay. Over 60 of these use the estuary as both a spawning and nursery ground. The Delaware River was once an important migratory pathway and sprawning ground for anadromous species, such as shad, herring and striped bass. Heavy municipal and industrial pollution from Philadelphia and Camden, however, has resulted in seriously low dissolved oxygen levels during the summer. This pollution block had prevented fish in upstream portions of the river from returning to the sea. However, in the last few years, the City of Philadelphia has completed its last sewerage treatment facility and the water quality as well as the dissolved oxygen levels have increased considerably. This has allowed the shad runs to increase after a half century of reduced population levels. Unfortunately, striped bass reproduction in the river continued to remain at a low level.

RECREATIONAL FISHERIES



Weakfish

Season

The weakfish, sometimes called gray sea trout, is the primary target of Delaware Bay anglers. Weakfish enter the Bay, usually in mid-April, to spawn. As they first enter, they do not actively feed. By early May, however, feeding increases as water temperatures rise. The first wave of fish to enter the bay are old, mature fish weighing 6-14 pounds. Many leave after spawning in mid-June and migrate northward along the coast. A second wave, also of mature, but smaller fish (3-6 pounds), arrives as the first wave exits. After spawning, the second wave also departs and is replaced by a third group of immature one-year-old fish that stay until October.

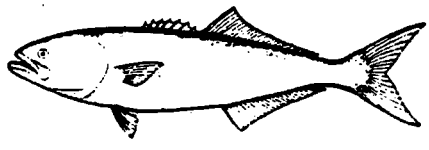
In recent years, the weakfish has increased tremendously in importance in Raritan Bay and Sandy Hook Bay, where it is believed to spawn. The first weakfish are taken by anglers during mid to late June. Large fish are caught in the bay and along the oceanfront by anglers throughout the summer.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the areas between Ambrose, Sandy Hook and Chapel Hill Channels, between Sandy Hook and Earle Pier and the oceanfront along Sandy Hook. Secondary grounds extend further into the bay and include a large area bordering Perth Amboy Channel and another area along the west side of Chapel Hill Channel and the Shoals surrounding West Bank Light. Another secondary ground occurs at the mouth of the bay, north and south of Ambrose and Sandy Hook Channels.

Delaware Bay

The primary sportfishing grounds extend from Brandywine Shoal up the bay to Cross Ledge and from Egg Island Point and Deadman Shoal to Blake and Lower Middle Channels. The secondary grounds cover most of the remainder of the bay from Arnold Point Shoal to the shoals at the mouth of the bay.



Bluefish

Season

Bluefish enter New Jersey's major bays in early May. Until their departure in late October, the bluefish population is represented by one or more year classes, from young-of-the-year fish, called snappers, to 15-pound jumbos. Bluefish less than three pounds dominate the population throughout the summer.

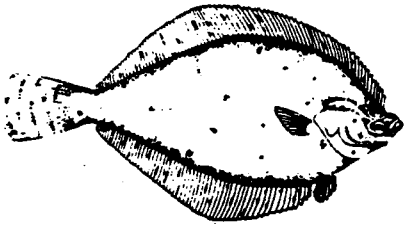
Fishing Grounds
Raritan Bay and Sandy Hook Bay

Although bluefish are caught at one time or another throughout the entire bay, the primary fishing grounds extend from the Verrazano Narrows Bridge to Ambrose Channel, encompass the large area at the mouth of the

bay bordered by Chapel Hill, Sandy Hook and Ambrose Channels, and extend along the oceanfront off Sandy Hook.

Delaware Bay

While bluefish are taken throughout the offshore portion of the bay as far upbay as Ship John Shoal, the primary grounds extend from Brandywine and Deadman Shoal up the north side of the shipping channel to Ben Davis Point Shoal.



Winter Flounder

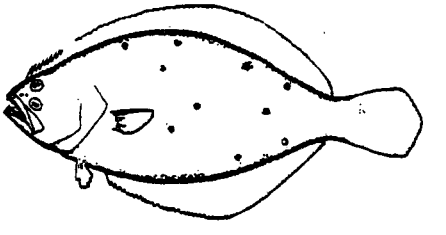
Season

Adult winter flounder enter New Jersey bays in November and remain until late April, when they return to the ocean to spend the summer. Juveniles and some adult fish remain in the bays throughout the year. Although winter flounder enter Delaware Bay, their numbers are relatively small, particularly in recent years, and presently do not support a sportfishery. It is, however, an important species in Raritan Bay and Sandy Hook Bay. Most fishing activity occurs during March and April. With cold water temperatures in January and February, winter flounder do little feeding and thus are rarely caught by anglers.

An angler unhooks a bluefish caught at the mouth of Delaware Bay.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds extend from the Highlands Bridge along Sandy Hook to the channel and around Earle Pier. Secondary grounds include the area from Sandy Hook along the shore to Matawan Creek, the mouth of the Arthur Kill and the area between Perth Amboy Channel and Great Kills Harbor.



Summer Flounder

Season

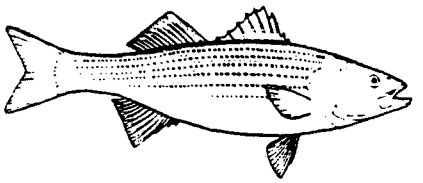
Summer flounder, called fluke in the northern part of the state and flounder in the south, enter New Jersey bays in late April or early May. They spend the summer feeding in the bays and then move into the ocean in early September prior to their offshore migration to wintering grounds offshore as far as the edge of the continental shelf.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

The primary fishing grounds include the area at the mouth of the bay between the three channels and between Sandy Hook and Earle Pier. Secondary grounds include the large area spanning the length of Staten Island and the area to the west of Earle Pier on either side of Perth Amboy Channel.

Delaware Bay

The primary summer flounder fishing grounds extend from Brandywine and Deadman Shoals up both sides of the shipping channel to Cross Ledge. The secondary grounds surround the primary grounds and include the shoals at the mouth of the bay.



Striped Bass

Season

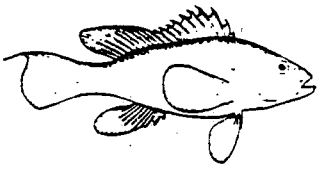
Striped bass, called rock on Delaware Bay, are caught by anglers in Delaware Bay and Raritan Bay and Sandy Hook Bay between mid-April and mid-November. During the early season, stripers are found in the interior parts of the bay. As the season progresses, they seem to move towards the mouth of the bay.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

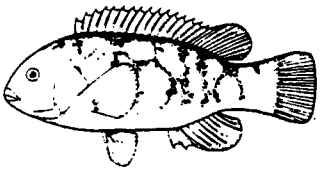
The primary fishing grounds for striped bass include the area bounded by Sandy Hook and Chapel Hill Channels, Rockaway Point, West Bank, the Verazano Narrows Bridge and the beachfront along Sandy Hook. Secondary grounds include the bayfront along Staten Island and the New Jersey shore between Union Beach and Highlands, Earle Pier and the west side of Chapel Hill Channel.

Delaware Bay

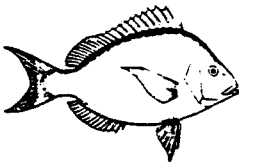
A minimal amount of fishing is directed at striped bass in Delaware Bay. Striped bass are caught at the mouth of the bay on the various shoals, collectively known as The Rips, and up the bay on shoals that border the shipping channel such as Cross Ledge, Ben Davis Point Shoal and Ship John Shoal.



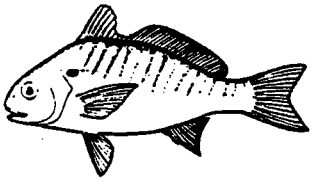
Sea Bass



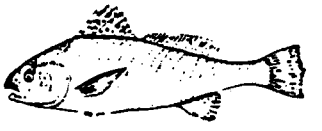
Tautog



Scup



Spot

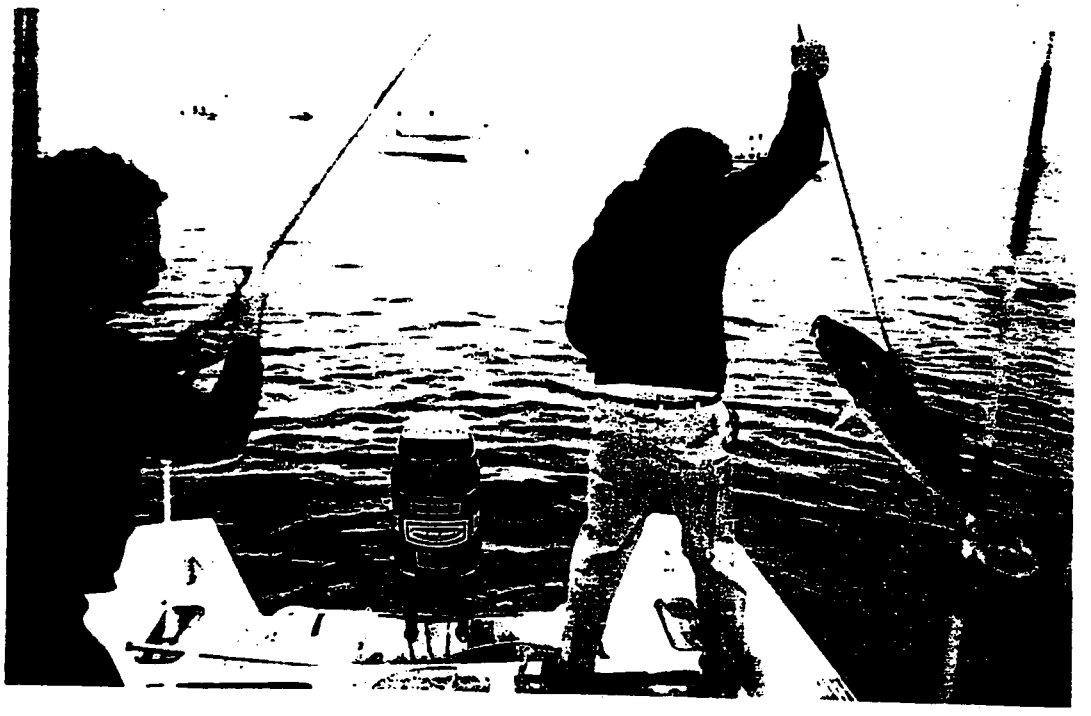


Croaker

Sea Bass, Tautog, Scup, Spot and Croaker

Season

A variety of bottom fish, including sea bass, scup, spot, croaker and tautog, are caught by anglers between April and October. Spot and croaker inhabit sand, mud and shell bottoms. Sea bass, progy and tautog prefer shell and rock.



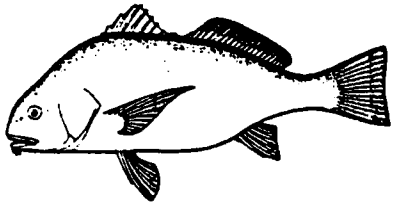
Gaffing a Sandy Hook Bay striper.

Fishing Grounds
Raritan Bay and Sandy Hook Bay

Bottom fish are found throughout the bay around natural and artificial structures such as piers, jetties, fixed channel markers, gravel bars, shellfish beds and debris. The largest areas are the Tin Can Grounds and Romer Shoal at the mouth of the bay and the shellfish beds off Union Beach. Other smaller areas include the Highlands Bridge, Earle Pier, Atlantic Highlands breakwater, the islands around West Bank, the tip of Sandy Hook, Old Orchard Shoal, the deep holes off Perth Amboy and to the west of Chapel Hill Channel.

Delaware Bay

In Delaware Bay, most of the bottom fishing grounds are on sand, mud or oyster shell bottom. The area surrounding Deadman Shoal has been productive for croakers. Spot are caught along the bayshore at Bidwell Creek, Egg Island Point and Fortescue. Sea bass are caught, usually incidentally to the taking of summer flounder, over a wide area, including Egg Island flats and the Punk Grounds on the New Jersey side, and from Fourteen Foot Light to the Shears on the Delaware side. Tautog are caught around artificial rock structures such as Brandywine Light and the Lewes Ferry breakwater.



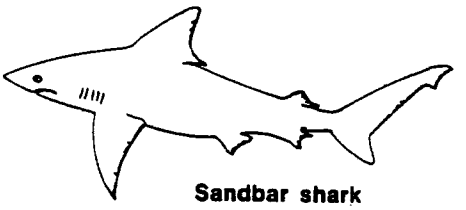
Black Drum

Season

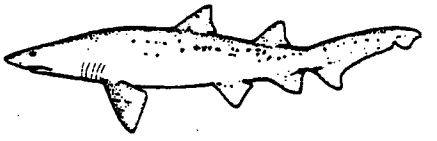
Although black drum historically were caught in the bays throughout New Jersey, they are now almost entirely restricted to Delaware Bay. Drum enter the bay in May to spawn. After spawning, they remain in the bay throughout the summer, but are most actively fished during May and early June.

Fishing Grounds
Delaware Bay

The primary sportfishing ground for black drum is bounded by Bay Shore Channel and Deadman Shoal on the east and Brandywine Shoal and Fourteen Foot Bank on the west. Secondary grounds surround the periphery of the primary grounds and include several areas on the Delaware side near Old Bank Shoal and the Hawknest.



Sandbar shark



Sand Tiger shark

Sharks

Season

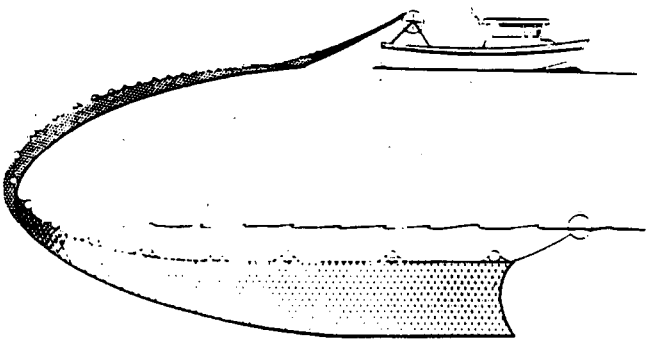
The two most common species of toothed sharks caught in New Jersey bays are the sandbar or brown shark and the sand tiger. In addition, bull sharks have occasionally been taken by sportfishermen in Delaware Bay. Sharks enter the bays in June and stay until water temperatures begin to decline in September or October. Adult female sandbar sharks use Delaware Bay as an important pupping area. They usually do not feed during the time subsequent to giving birth to live young. The adult males remain offshore and thus are not found in the bay.

Sharks have provided a popular sportfishery in Delaware Bay for over 50 years, but little fishing activity has been exerted for them in Raritan Bay and Sandy Hook Bay.

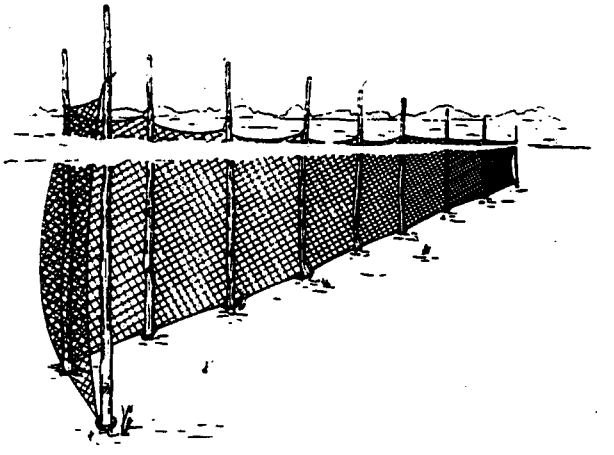
Fishing Grounds
Delaware Bay

The most productive shark fishing areas have been the ends or edges of deep sloughs and channels near the mouth of Delaware Bay. There are two primary shark fishing grounds, one on the New Jersey side of the Shipping Channel to the east of Brandywine Shoal and another on the Delaware side of the channel in the anchorage. Secondary fishing grounds occur along the Shipping Channel as far up the bay as Ben Davis Point Shoal.

COMMERCIAL FISHERIES



Drift gill net



Staked gill net

Gill Net

Description of Gear

Two basic types of gill nets are used in Delaware Bay, the staked or anchored net and the drift net. Staked nets are set between wooden stakes or poles that are either driven or jetted into the bottom. Anchored nets are held in position by a series of anchors. Due to strong tidal currents, staked nets are usually set in coves and shoal areas less than 15 feet deep. To further reduce drag, they are also relatively short, usually less than 180 feet in length. A lead line at the base keeps the net on or near the bottom. A float line along the top rises and falls with the tide and keeps the upper edge of the net at the surface of the water.

Drift nets are allowed to drift with the current and are usually used in water deep enough so that the lead line does not touch bottom. They are much longer than staked nets, ranging from 300 to 1,200 feet in length.

Gill nets are made of monofilament or fine nylon that is relatively invisible in the turbid bay waters. The mesh size used is dependent upon the target species. Stretched mesh of 5" or larger is used for shad, large weakfish and bluefish. Mesh of 2 3/4" or larger is used for river herring, menhaden, white perch, and small weakfish.

Only staked gill nets for shad are allowed in Raritan Bay and Sandy Hook Bay and only in a limited area. On the New Jersey side of Delaware Bay both staked and drift nets are permitted. On the Delaware side, staked nets are only permitted on the oyster grounds. Elsewhere, only drift gill nets are permitted.

Season

The use of staked or anchored and drift gill nets is confined to particular seasons by law. The prescribed seasons, however, are liberal and the netting period is limited more by the availability of fish than regulation.

Staked gill nets are usually first set in late February or March, to catch shad migrating up the Delaware or Hudson Rivers to spawn. Other early species include river herring, menhaden and white perch. The herring and menhaden are sold for crab bait.

Drift netting begins with the arrival of weakfish and bluefish in mid-April. The weakfish is the moneymaker, having the highest market value of the fish caught in volume in the two bays.

Most staked nets are pulled our during mid-May due to a number of problems, including the invasion of horseshoe crabs, which create extensive net tangles and damage; warm water temperatures, which lead to spoilage of fish; and the fouling of nets with slimy algae and stinging sea nettles. The few staked nets that are fished throughout the summer are primarily intended for menhaden.

Gillnetting shad and weakfish on Delaware Bay.

Drift nets are used throughout the summer and early fall, although the greatest effort is expended during spring and early summer.

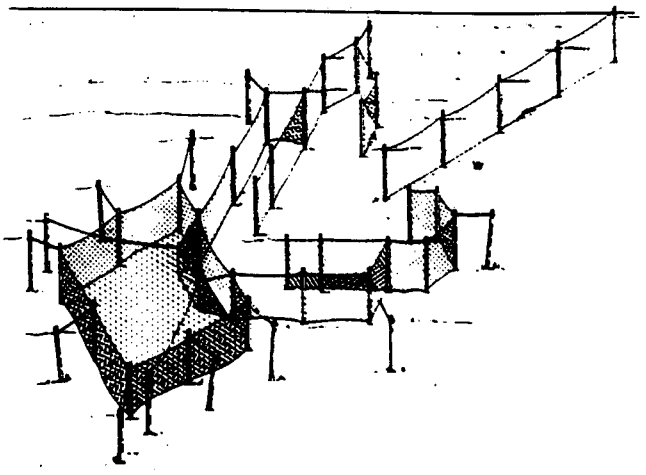
Methods

Staked gill netters operate anywhere from a couple of nets to 40 or more. A small number of nets can be checked by one man, but a large number requires a two-man crew. Weather permitting, nets are checked every day. To check the nets, a boat starts at one end of a row, and is hauled along from pole to pole, via the net lines. As the nets are lifted and pulled across the boat the fish are removed.

A drift net is followed and tended continuously by the fisherman. It is set in a line perpendicular to the flow of the current and may be set many times during the day.

Fishing Grounds

On Delaware Bay, staked gill nets are set in the shallow cove areas on the New Jersey side. The primary drifting gill net grounds here extend from the channel to the bayshore from the Cape May Canal to Egg Island Point. In Raritan Bay and Sandy Hook Bay, staked nets are confined to the nearshore area between Keyport and Port Monmouth and along Sandy Hook.



Pound Net

Description of Gear

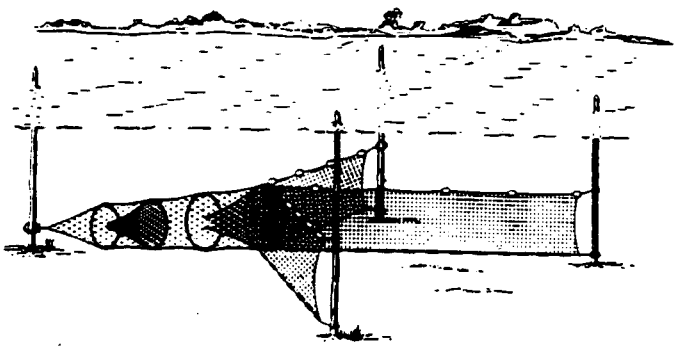
Pound nets are stationary fish traps. In Raritan Bay, they have been in use for over a century. Pound nets are strung on long hardwood poles that are driven or jetted into the bay bottom. They are set perpendicular to the prevailing shore and tidal currents to intercept fish as they travel up and down the bay. When several pounds are set in the same area they are aligned end to end to form a long continuous barrier to fish movements.

The overall length of pound nets is 500 to 750 feet. A long leader (400 to 600 feet in length) consisting of 9 inch stretched mesh netting acts as a barrier to moving fish. The natural tendency of fish encountering the leader is to go around the net by heading offshore to deeper water. As fish move down the net, they enter the first of two heart-shaped funnels. The heart shape tends to always direct the fish further into the interior of the net. Eventually, they pass through the final funnel into the square-shaped pound or holding pocket. The pocket is about 50 feet long on a side and has a net floor.

Season

Although in some years pound nets may be erected as early as late February, the more typical start of operations is sometime during April. The season extends through the summer into October or November. After fishing operations end, the net and poles are removed to prevent their loss when ice locks the bay in winter.

In early spring, the catch consists of shad, herring and menhaden. Menhaden caught in pounds are sold as bait for other commercial and recreational fisheries. Summer catches are dominated by bluefish and weakfish. Other species taken include summer flounder, butterfish, northern puffer, sea bass, sturgeon and blue crab.



Methods

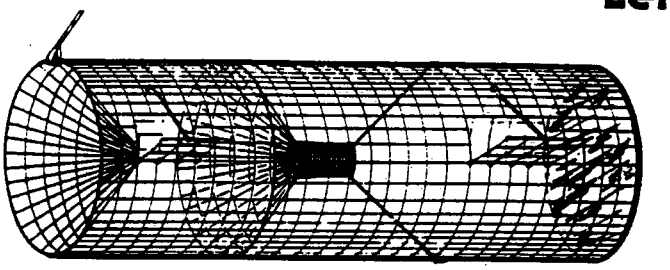
Each day, weather permitting, the nets are checked and emptied of their catch. A pound boat enters the pocket by lowering one edge of the net. The floor of the net is then raised very slowly until the fish inside are restricted to a small section of the pocket. The fishermen then ladle the catch into the boat using a long-handled dip net and a power winch.

Every two or three weeks, the nets must be taken to land for washing and drying. This process removes the algae which grows on and clogs the net. While one net is being cleaned, a fresh one is hung on the poles in its place.

Fishing Grounds

There are two primary pound net grounds in Raritan and Sandy Hook bays. The one in Sandy Hook Bay is located along Sandy Hook just north and west of Horseshoe Cove. The area in Raritan Bay is much larger, extending from Earle Pier to Keyport, although the majority of nets are located to the north of Earle Pier.

Eel Pot



Description of Gear

The typical eel pot is a 3-foot cylinder, 10-12 inches in diameter, made of plastic coated rectangular mesh wire with two net funnels. The funnels divide the pot into two compartments. The external one serves as a bait and entrance chamber, while the internal one is a holding chamber. Pots for catching large eels for sale as food are made with 1/2 inch by 1 inch mesh. Pots for small eels that are either salted for crab bait or held live for sportfish bait are made with 1/2 inch by 1/2 inch mesh.

Season

The eeling season begins in mid-April as eels emerge from their winter dormancy in the mud. Fishing continues until bay waters cool in late October. Eeling activity declines from late June to mid-August, when water tempertatures get very warm and eels become difficult to keep alive in the holding pens.

Methods

Eel pots are set in tidal creeks or along the bayshore either individually or in small strings. They are marked with floats or stakes. Individual eelers may set and tend 50 to 80 pots or more.

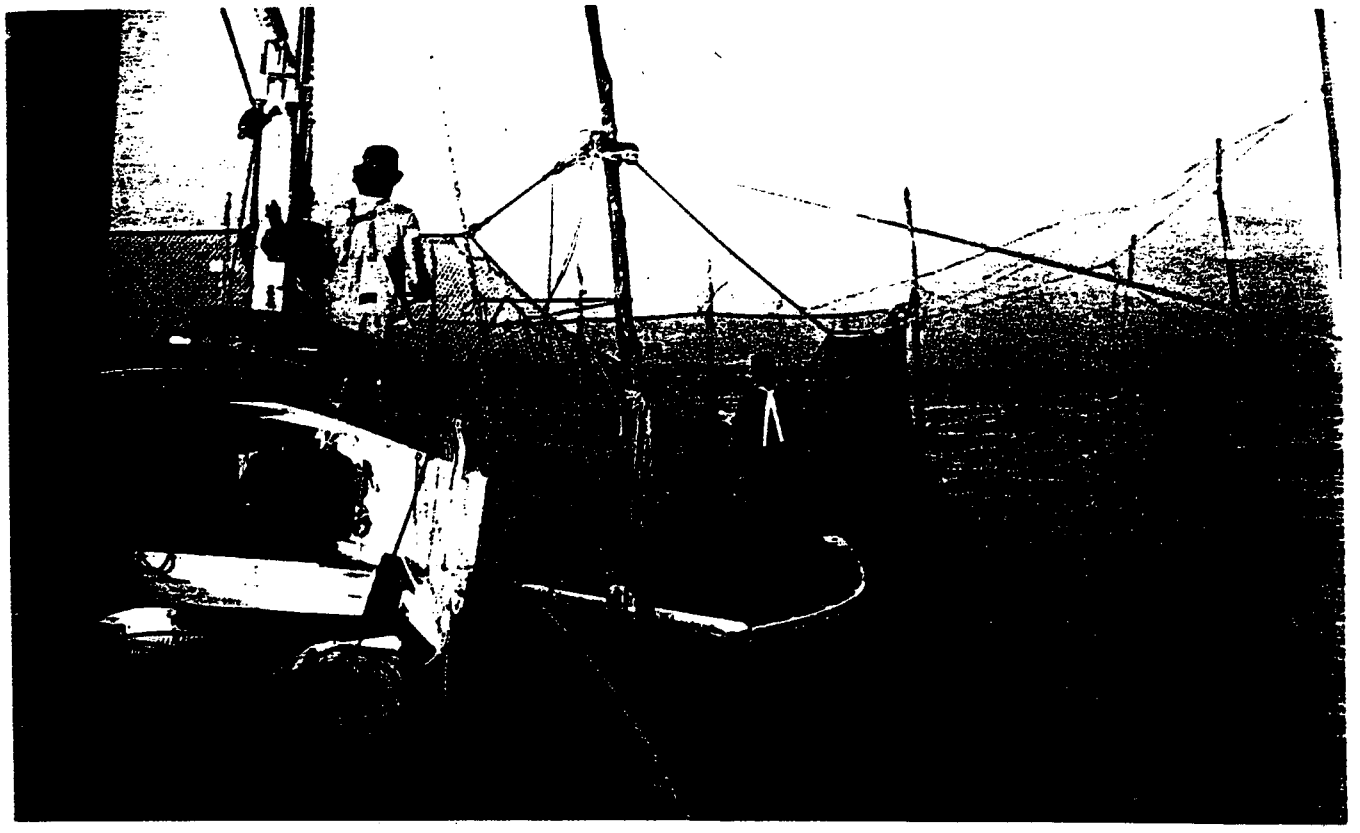
Eels are kept alive in large, floating boxes or pens. In the summer, when dissolved oxygen levels are low, aeration is often needed to keep the eels from suffocating. When a sufficient quantity has been caught, the eels are picked up by dealers who transport them live in tank trucks. The primary markets for eels are in Europe. They are packed on ice in crates and shipped overseas by airplanes.

Although surf clams and fish are used, female horseshoe crabs are the preferred bait for catching eels. Horseshoe crab fisheries have developed to supply bait for the eel fishery. In Delaware Bay, horseshoe crabs are caught in small wire pound nets that are set in shallow water along the beach. In Raritan Bay and Sandy Hook, they are caught mostly by modified crab dredges.

Fishing Grounds

In Raritan Bay and Sandy Hook Bay, eels are caught in the tidal creeks and along the bayshore during the cooler months of spring and fall. During the warm summer months, pots are set along the edge of Perth Amboy Channel.

In Delaware Bay, eels are caught in the tidal creeks and a 1/2 mile wide strip along the entire bayshore; during October, pots are occasionally set as far offshore as 2 miles. Pots are also set along the shipping channel in the upper reaches of the bay during midsummer.

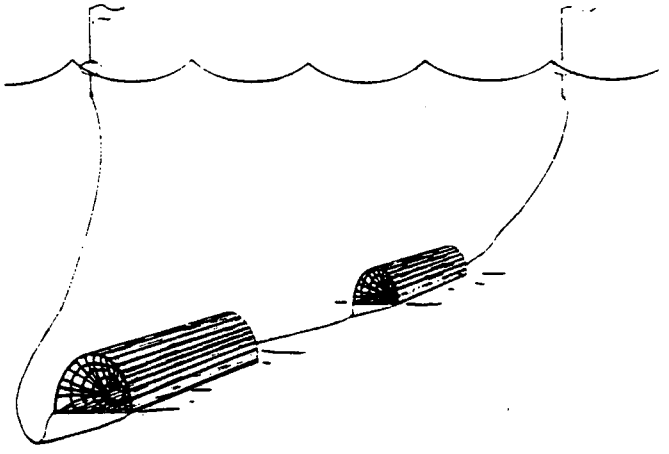


Commercial fishermen tend a pound net in Raritan Bay.

Lobster

Description of Gear

The typical New Jersey lobster pot is a rectangular box made of oak lathe with a pair of net entrance funnels. Depending on the preference of the fisherman, pots either have flat or rounded tops. A lobster pot has two compartments, with a net funnel leading into each. The initial one is for entry and bait and the second is for holding the catch. Wooden doors or flaps permit access to bait and to empty the pot. The pots are tarred to preserve the wood and netting; bricks are secured to the bottom for ballast.



Season

In the bays, lobstering begins in mid-June, extends through the summer and has a final spurt in October before the fishery drops off.

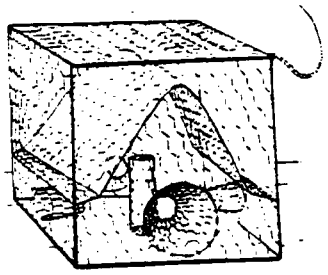
Method

Lobster pots are set in strings of 6 to 25 pots, each connected to a main line. Flag buoys, marking the location of the pot string, are attached to each end of the main line. Pots are baited with menhaden or scraps of fish.

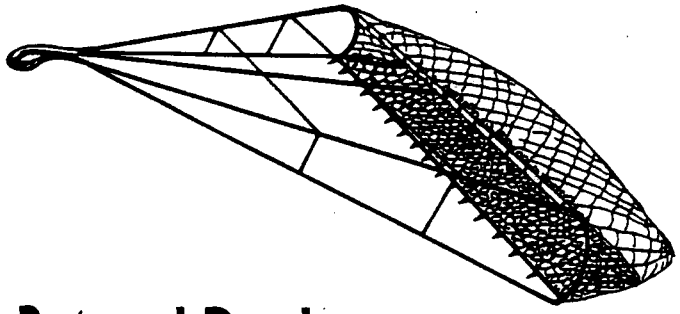
Fishing Grounds

In Raritan Bay and Sandy Hook Bay, lobster pots are set along the edges of Ambrose, Sandy Hook, Chapel Hill, and Perth Amboy Channels and in the deep holes west of Chapel Hill Channel.

In Delaware Bay, lobstering is restricted to Delaware fishermen in the area around the breakwater at Lewes, Delaware.



Commercial style crab pot



Crab dredge

Blue Crab Pot and Dredge

Description of Gear

Blue crabs are harvested commercially with pots in the warmer months and with dredges in the winter. The typical Delaware Bay crab pot is a 2-foot cube constructed of galvanized, hexagonal weave hardware cloth. The pot consists of an upper chamber or parlor for holding crabs and a lower chamber which has 2 to 4 entrance funnels and a bait cylinder. Four paddies of cement or asphalt are attached to the bottom of the pot for weight. Some crabbers tar their pots to inhibit corrosion and add zincs to retard electrolysis. Pots are set individually in lines or circles and are marked with numbered floats. Crab pots are baited with menhaden, herring or other fish scraps.

Crab dredges have steel frames and either chain link, wire or net bags for collecting the catch. The front of the dredge is equipped with teeth that scrape a few inches into the sand or mud bottom and lift out the crabs buried there. Each boat usually drags two to six dredges simultaneously. The larger boats are equipped with hydraulic winches that pull the dredges up to the boat and out of the water. The maximum dredge size permitted in Raritan Bay and Sandy Hook Bay is a 75 inch wide bar with 6 inch teeth.

Season

Blue crabs emerge from their overwinter stay in the mud in April as water temperatures increase. The potting season usually begins in late April or May and lasts until early November when cold water temperatures send the crabs into the mud again. Shedder crabs are mostly caught in June in pots. The dredge fishery extend from December through March.

Baiting crab pots

Methods

In Delaware Bay, individual crabbers operate lines of 100 to 300 pots. Weather permitting, the pots are checked every day. Crab potting is typically a two-man operation. One man operates the boat and pulls, empties, re-baits and re-sets the pots, while the other man sorts and puts the catch into bushel baskets.

The pots are moved periodically to follow the movements of the crabs. The typical seasonal pattern of the blue crab includes a general inshore movement to the bayshore and tidal creeks during the spring and an offshore migration to deeper, saltier waters during late fall.

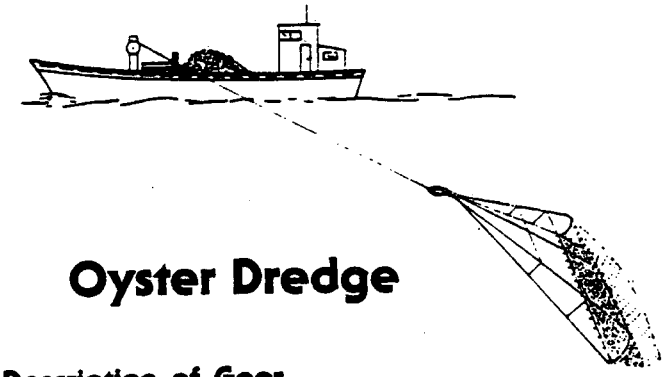
Fishing Grounds

On the New Jersey side of Delaware Bay, the primary potting grounds extend from Fishing Creek on Cape May up the bay to Oldman's Creek. Most fishing activity occurs within a mile or so of the bayshore and in the tidal creeks legally open to crabbing. At times, pots are set further offshore, to the edge of the shipping channel in the upstream portion of the crab grounds.

On the Delaware side, the bayward edge of the crab potting grounds is the Misipillion River. The majority of activity occurs nearshore, but at times pots are set as far as five miles offshore.

The blue crab dredging grounds in Delaware Bay are located in the deeper waters surrounding the shipping channel near the mouth of the bay. Blue crabs prefer mud bottoms in the deeper sections of the bay for overwintering. Crabs avoid oyster shell bottom, which is fortunate for crabbers, since these areas are legally off limits to crab dredging. In years when concentrations of wintering crabs are low, there is little or no dredging effort.

In Raritan Bay and Sandy Hook Bay, the dredging grounds extends from the Raritan River to the mouth of the bay in depths usually exceeding 12 feet. They include the areas on either side of Perth Amboy and Chapel Hill Channels and Sandy Hook Bay.



Oyster Dredge

Description of Gear

Oysters are harvested with large steel-frame dredges, up to 54 inches across the tooth-bar, that are towed across the bottom. A steel, ring-mesh bag on the back of the dredge holds the catch until it is lifted hydraulically and dumped on deck. Although oysters are now harvested under power, most of the boats in the fleet were formerly sailing dredge boats that were converted to power when it became legal in 1945.

Season

Oysters may be legally harvested from all leased grounds between September and June. Since 1975, summer harvest has been permitted on leased areas below the Southwest line. Oyster seed is transplanted from state-owned beds to leased grounds during "Bay Season", in May and June.

Methods

Oyster culture begins with the transplanting of seed from state seed beds to leased ground in late spring. Seed oysters are allowed to grow on leased ground until reaching harvestable size. The peak market and harvest of oysters occurs during the fall holidays, between Thanksgiving and Christmas.

Oysters are scraped from the bottom with dredges. After the catch has been dumped on deck, fishermen cull the live oysters from shell and other debris. Culling was formerly done by hand, but most boats now use mechanical culling devices.

The day's catch is taken to processing houses in Port Norris and Bivalve where the oysters are either packed live in boxes and shipped to market or shucked and further processed. Shucked oysters are either packed fresh in tins or breaded and frozen before being sent to market. All of the shell remaining after processing is stored for eventual return to the oyster beds. Shell material is needed to provide a suitable substrate for oyster larval attachment and thus is valuable for maintaining and increasing production on the seed beds.

Fishing Grounds

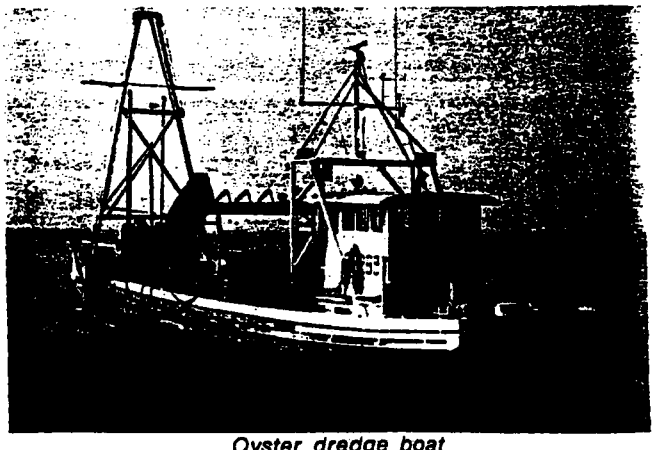
The importance of the oyster beds of Delaware Bay has been recognized since colonial times. Prior to the mid 1800s, the oyster industry primarily subsisted by the direct marketing of oysters from the "Natural Oyster Beds". The complexion of the industry changed during the decade prior to 1850 when the oystermen realized that it was economically advantageous to "plant" and establish inventories of oysters beyond the natural beds. Oysters were held in these planting areas until an optimum market size was reached. The oyster industry is now based upon two principal areas, the Natural Seed Beds and the Leased Planting Grounds.

The Natural Seed Beds, for the most part, occupy an area above the Southwest Line, a line of demarcation which has historically separated the planting grounds from the Natural Seed Beds. There are approximately 12,000 acres of productive seed beds and another 3,000 acres of marginally productive beds between the Southwest Line and Artificial Island. Average salinities for the seed areas range from 21 parts per thousand (ppt) at the Southwest Line to 4 or 5 ppt at Artificial Island. Water depth ranges from 5 to 25 feet.

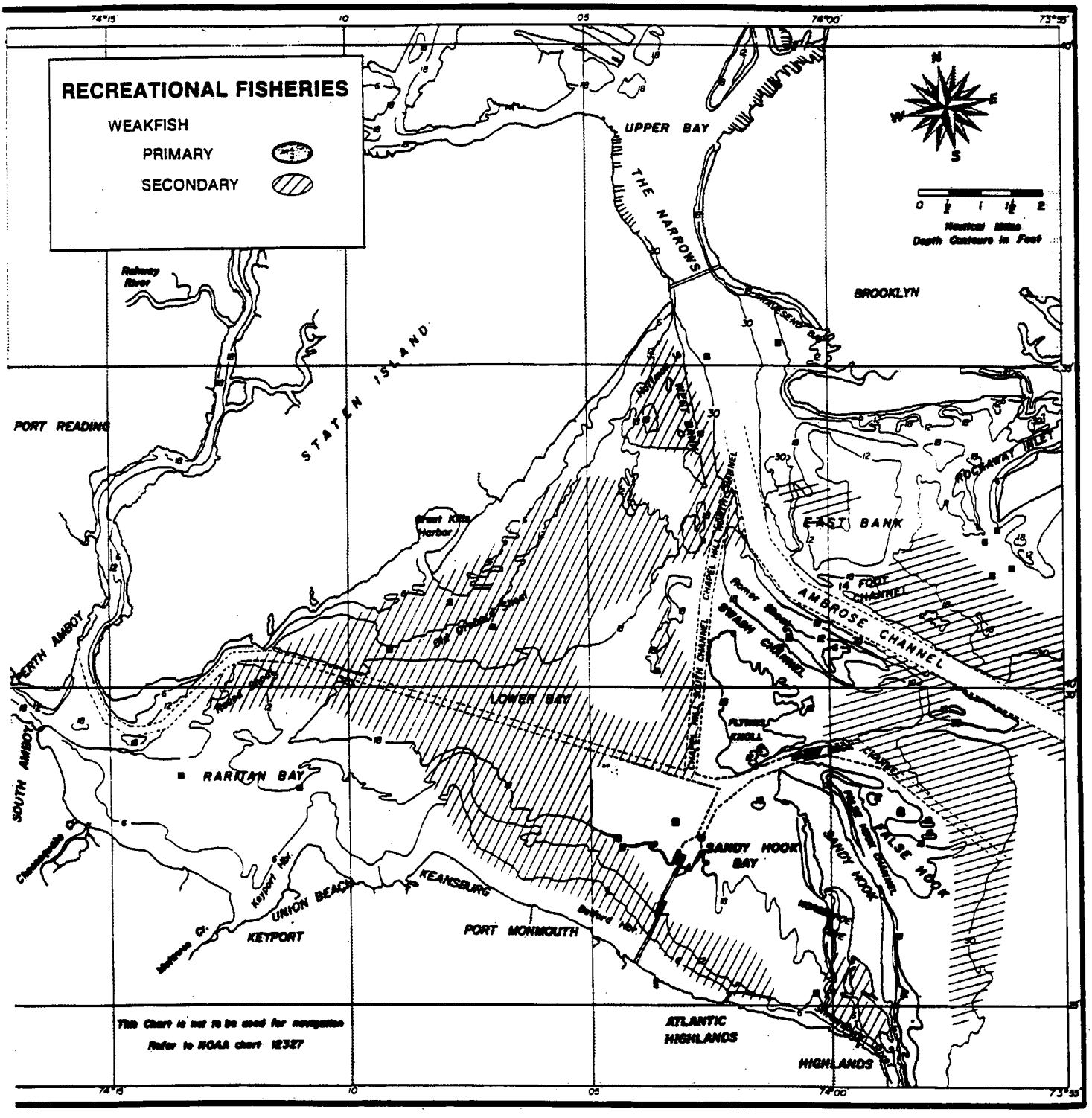
The planting grounds encompass approximately 90,000 acres, of which 29,000 acres are currently leased for planting purposes. Only a small percentage of this leased area is, however, routinely used.

Oyster production has fluctuated, sometimes rather dramatically, throughout the recorded history of the fishery. Early estimates indicated that the annual seed harvests frequently exceeded one million bushels, with occasional higher estimates. These estimates may have been somewhat inflated, however, due to the lack of discrimination between native and imported seed stocks.

During its recent history, the industry was devastated by an epizootic parasite commonly referred to as MSX. This parasite was initially recognized in the late 1950s and was responsible for the death of oysters on the planting and, to a lesser extent, the seed areas of the bay. It was estimated that as much as 95 percent of the market bed oyster stocks were lost within three years after the onset of this oyster disease. As a result of high mortalities in these traditional oyster planting grounds, a new area of approximately 7,000 acres, located above the Southwest Line and adjacent to some of the natural beds, has been made available for planting purposes. This area has lower salinity ranges and is therefore not as affected by MSX.



Oyster dredge boat


RECREATIONAL FISHERIES
WEAKFISH
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Raritan River
East Kills Harbor
Old Orchard Shoal
Romer Shoal
SWASH CHANNEL
CHAPEL HILL CHANNEL
EAST BANK
FORT WADSWORTH
AMBROSE CHANNEL
LOWER BAY
RARITAN BAY
SOUTH AMBOY
PERTH AMBOY
Chesterfield
KEYPORT
UNION BEACH
KEANSBURG
PORT MONMOUTH
Belford Hbr.
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327

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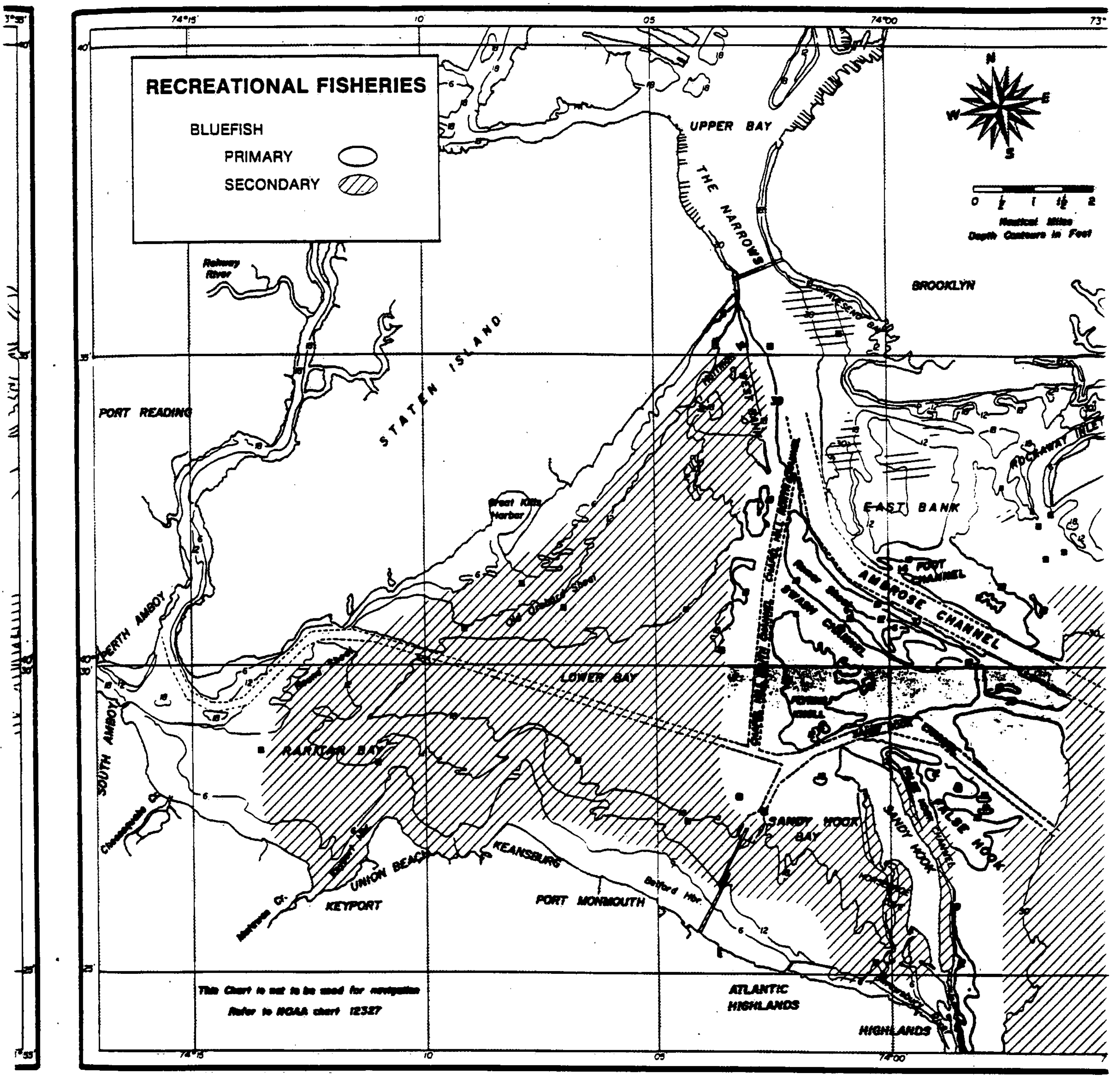
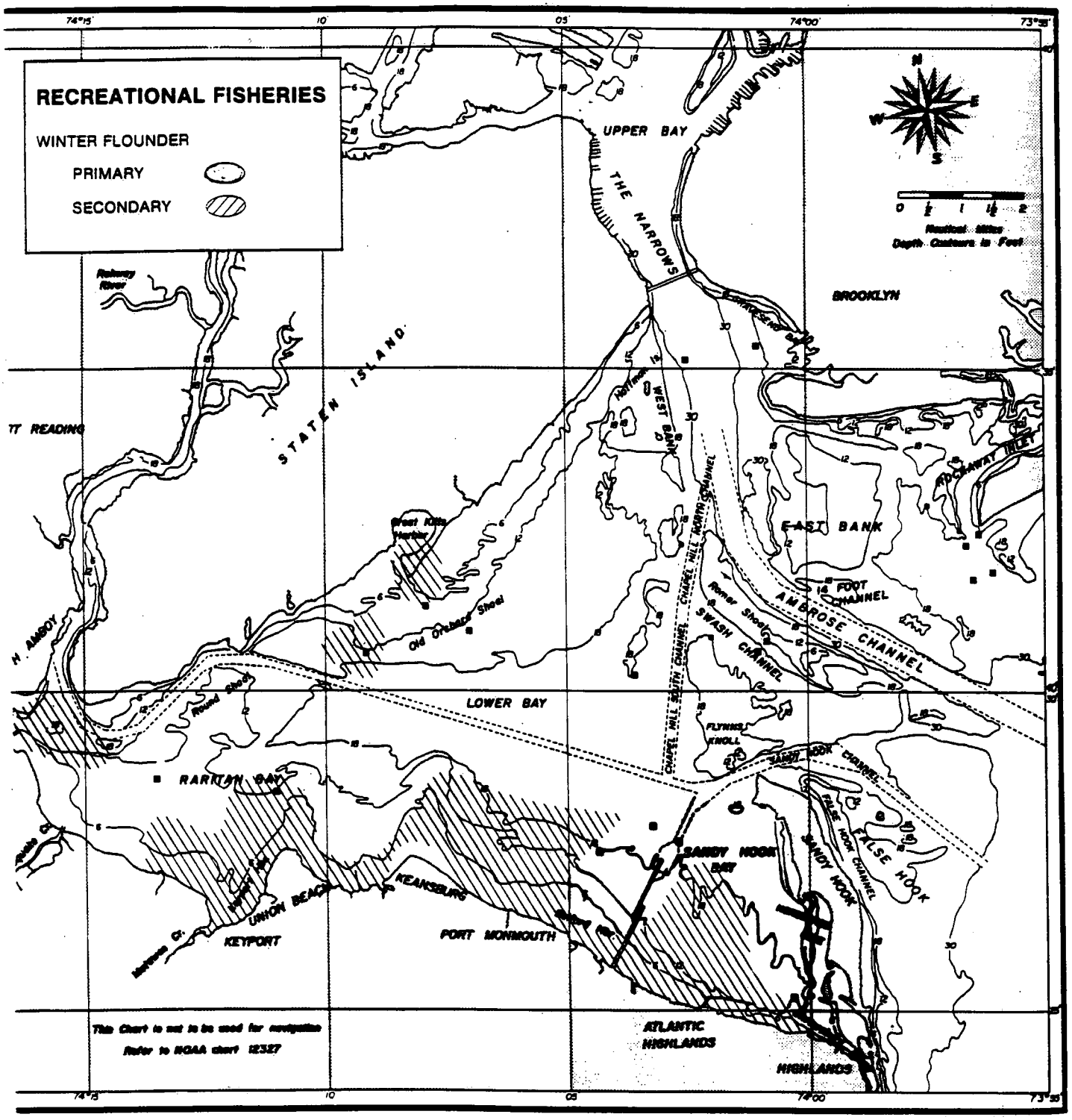
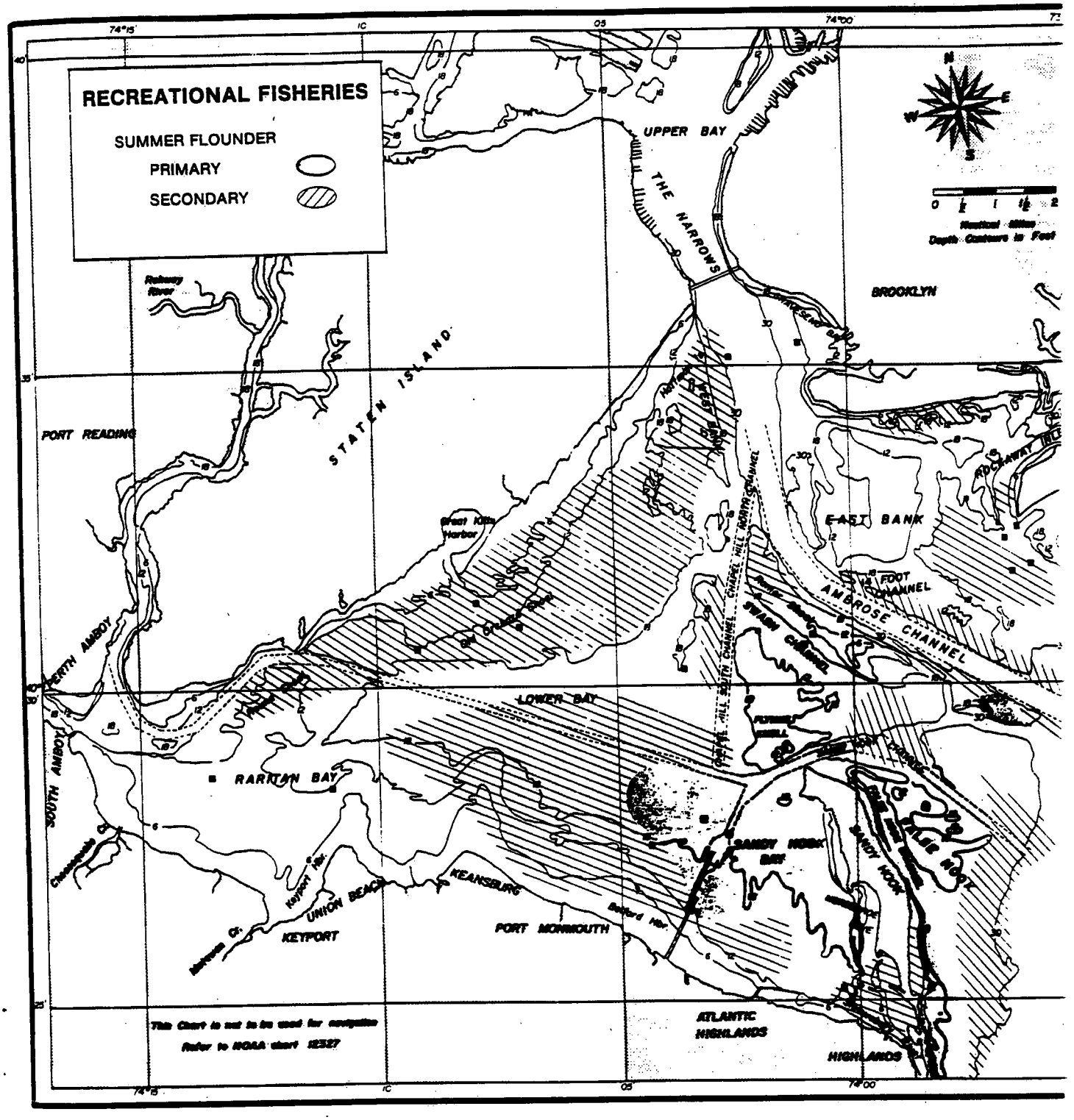

RECREATIONAL FISHERIES
BLUEFISH
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
PERTH AMBOY
SOUTH AMBOY
EAST BANK
AMBROSE CHANNEL
SWASH CHANNEL
LOWER BAY
RARITAN BAY
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
UNION BEACH
KEANSBURG
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327


RECREATIONAL FISHERIES
WINTER FLOUNDER
PRIMARY
SECONDARY
74°15'
10'
05'
74°00'
73°55'
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
TT READING
N. AMBOY
Great Kills Harbor
Old Orchard Shoal
Romer Shoal
SWASH CHANNEL
WEST BANK
CHAPEL HILL SOUTH CHANNEL
CHAPEL HILL NORTH CHANNEL
EAST BANK
AMBROSE CHANNEL
14 FOOT CHANNEL
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
RARITAN BAY
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK CHANNEL
FALSE HOOK
UNION BEACH
KEANSBURG
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327

18


RECREATIONAL FISHERIES
SUMMER FLOUNDER
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
EAST BANK
AMBROSE CHANNEL
LOWER BAY
RARITAN BAY
SANDY HOOK BAY
SANDY HOOK
PORT MONMOUTH
KEANSBURG
UNION BEACH
KEYPORT
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HIGHLANDS
SOUTH AMBOY
PERTH AMBOY
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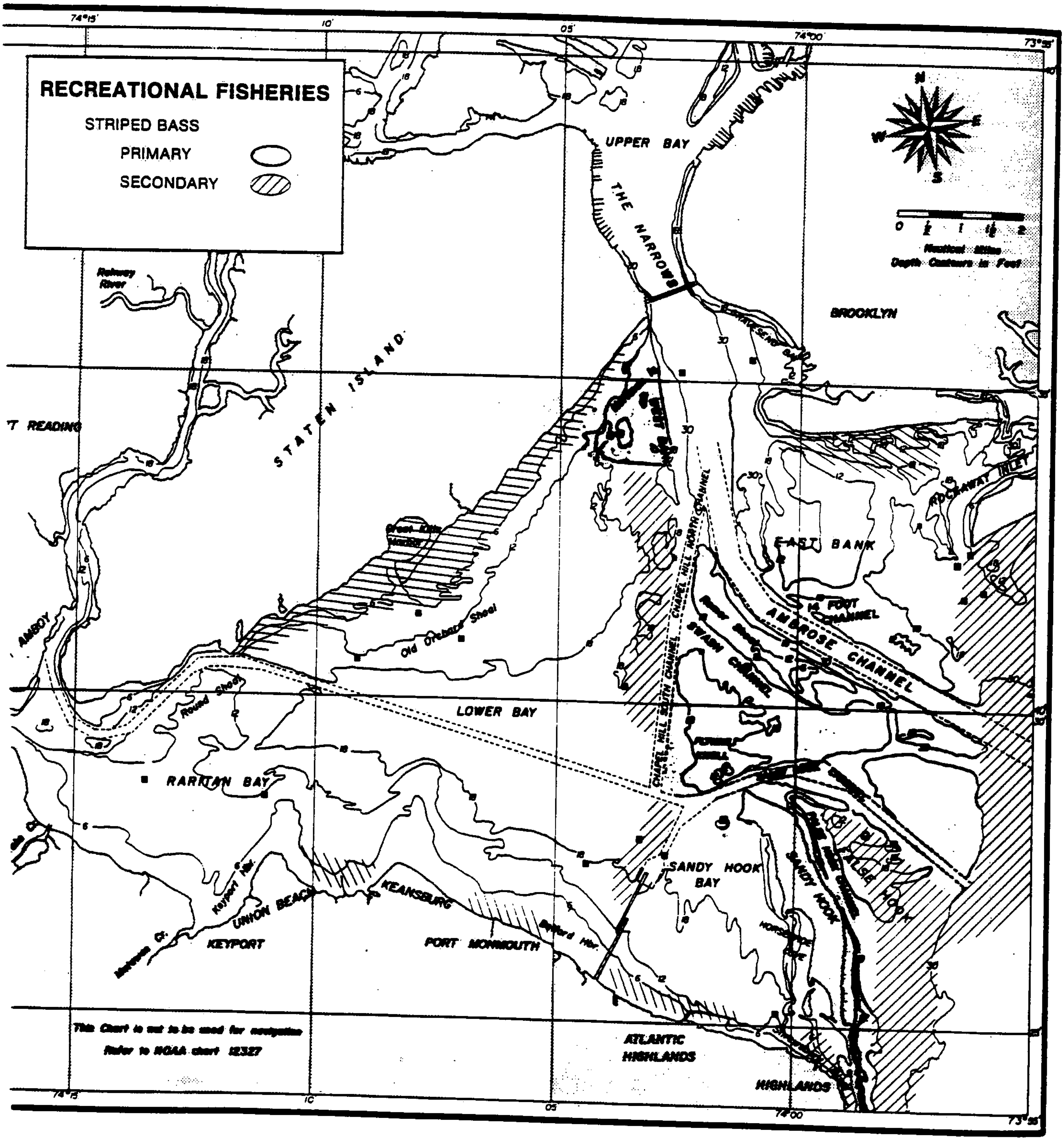

RECREATIONAL FISHERIES
STRIPED BASS
PRIMARY
SECONDARY
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
LOWER BAY
RARITAN BAY
EAST BANK
AMBROSE CHANNEL
SWASH CHANNEL
CHAPEL HILL NORTH CHANNEL
CHAPEL HILL SOUTH CHANNEL
ROCKAWAY INLET
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
KEANSBURG
UNION BEACH
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
Old Orchard Shoal
Round Shoal
Nautical Miles
Depth Contours in Feet
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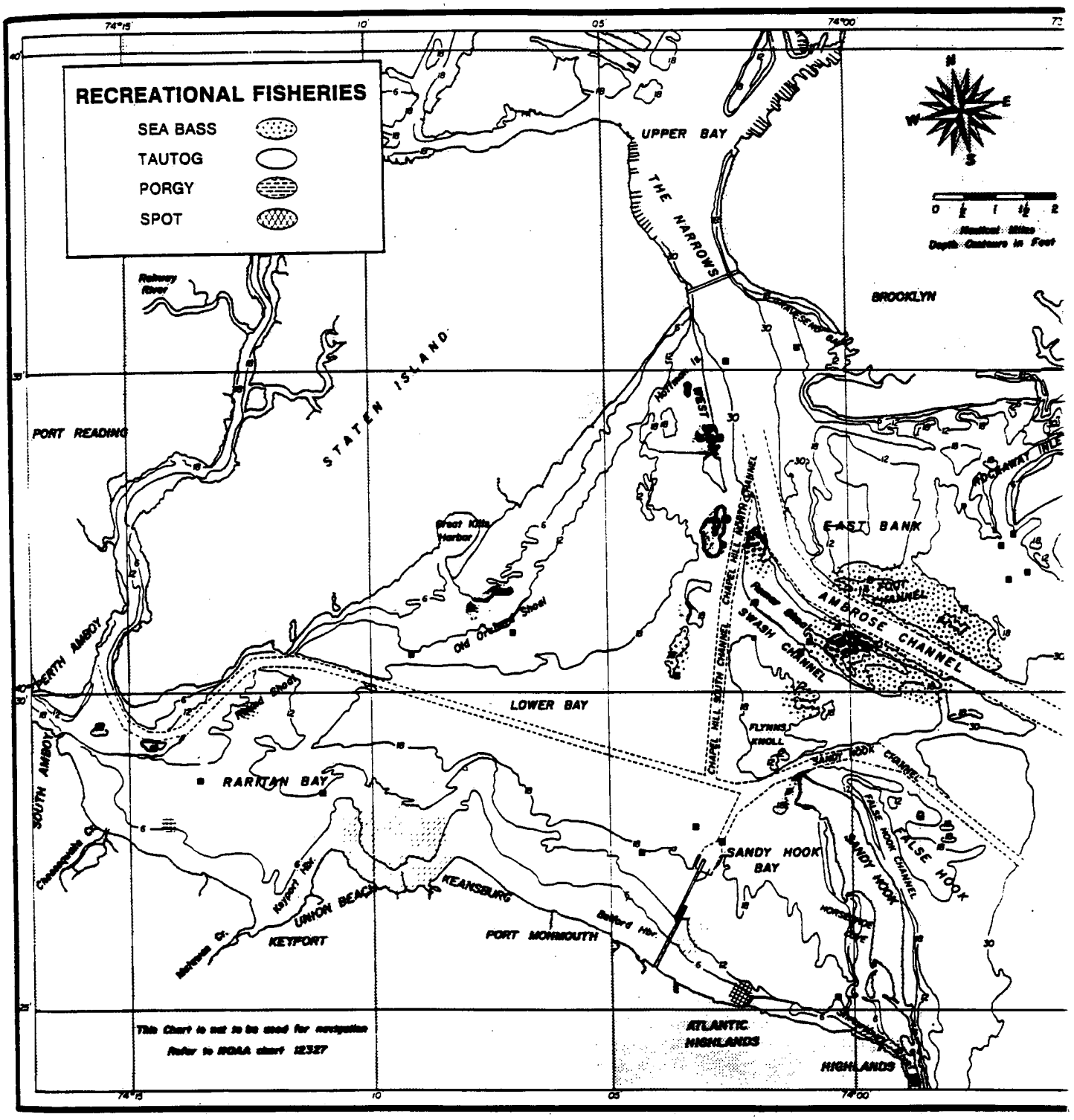
Refer to NOAA chart 12327


RECREATIONAL FISHERIES
SEA BASS
TAUTOG
PORGY
SPOT
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
EAST BANK
AMBROSE CHANNEL
SWASH CHANNEL
CHAPEL HILL SOUTH CHANNEL
CHAPEL HILL NORTH CHANNEL
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
FALSE HOOK CHANNEL
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
RARITAN BAY
SOUTH AMBOY
KEANSBURG
UNION BEACH
KEYPORT
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
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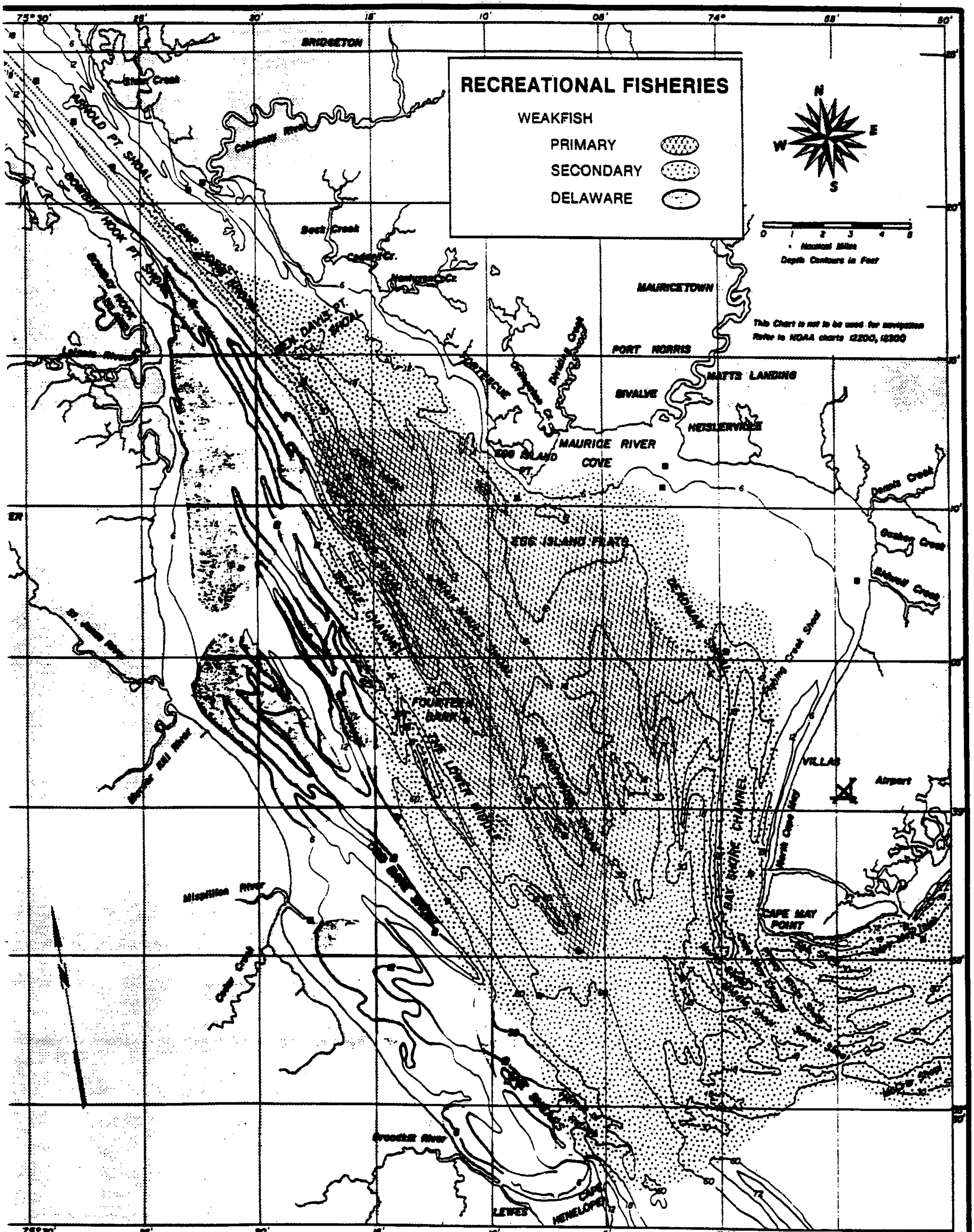
Refer to NOAA chart 12327



RECREATIONAL FISHERIES
WEAKFISH
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND PT.
EGG ISLAND FLATS
FORTESCUE
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
BEN DAVIS PT. SHOAL
FOURTEEN FT. BANK
BAY SHORE CHANNEL
VILLAS
Airport
CAPE MAY POINT
Mispillion River
Broadkill River
LEWES
CAPE HENELOPEN
Back Creek
Dennis Creek
Goshen Creek
Bidwell Creek
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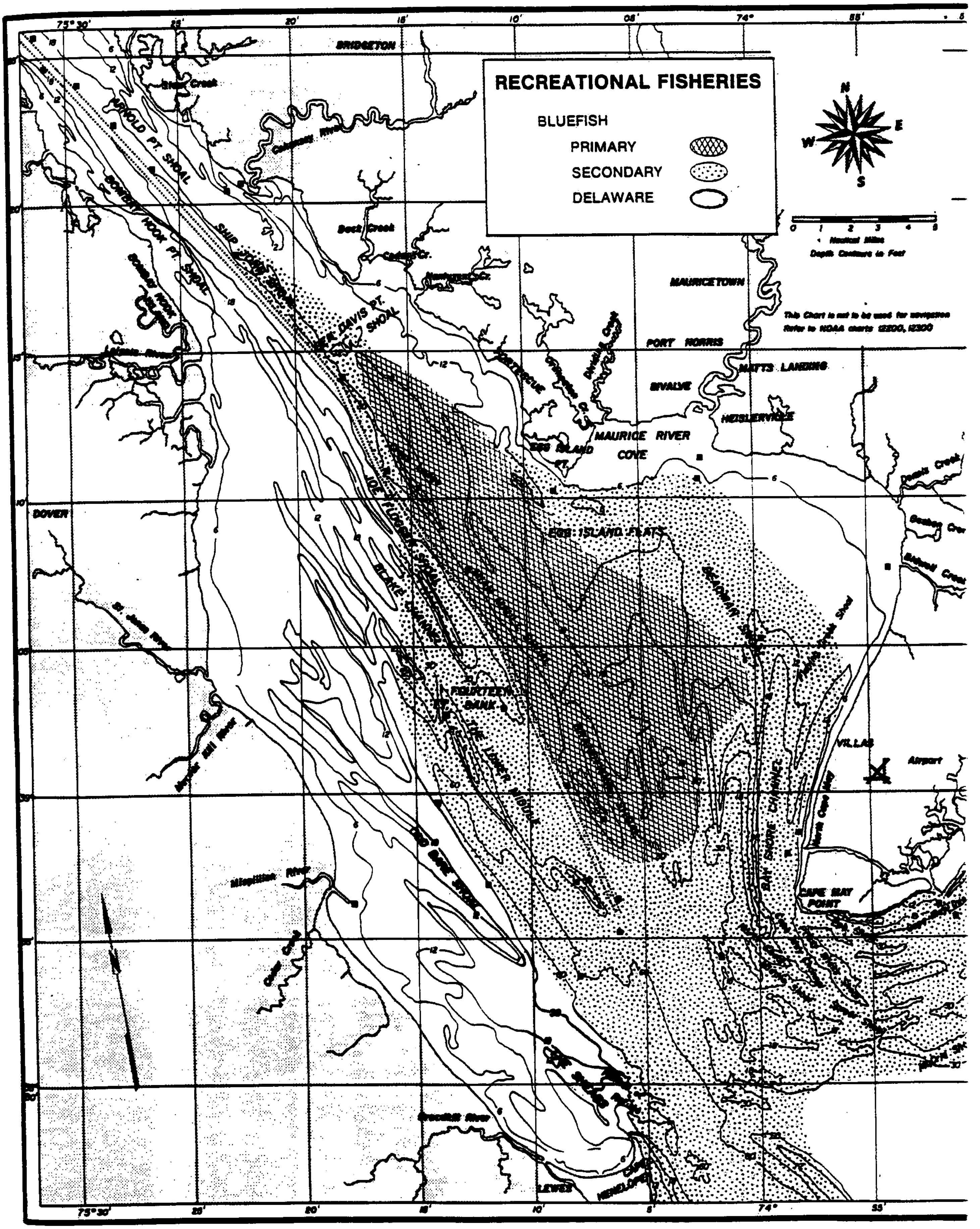
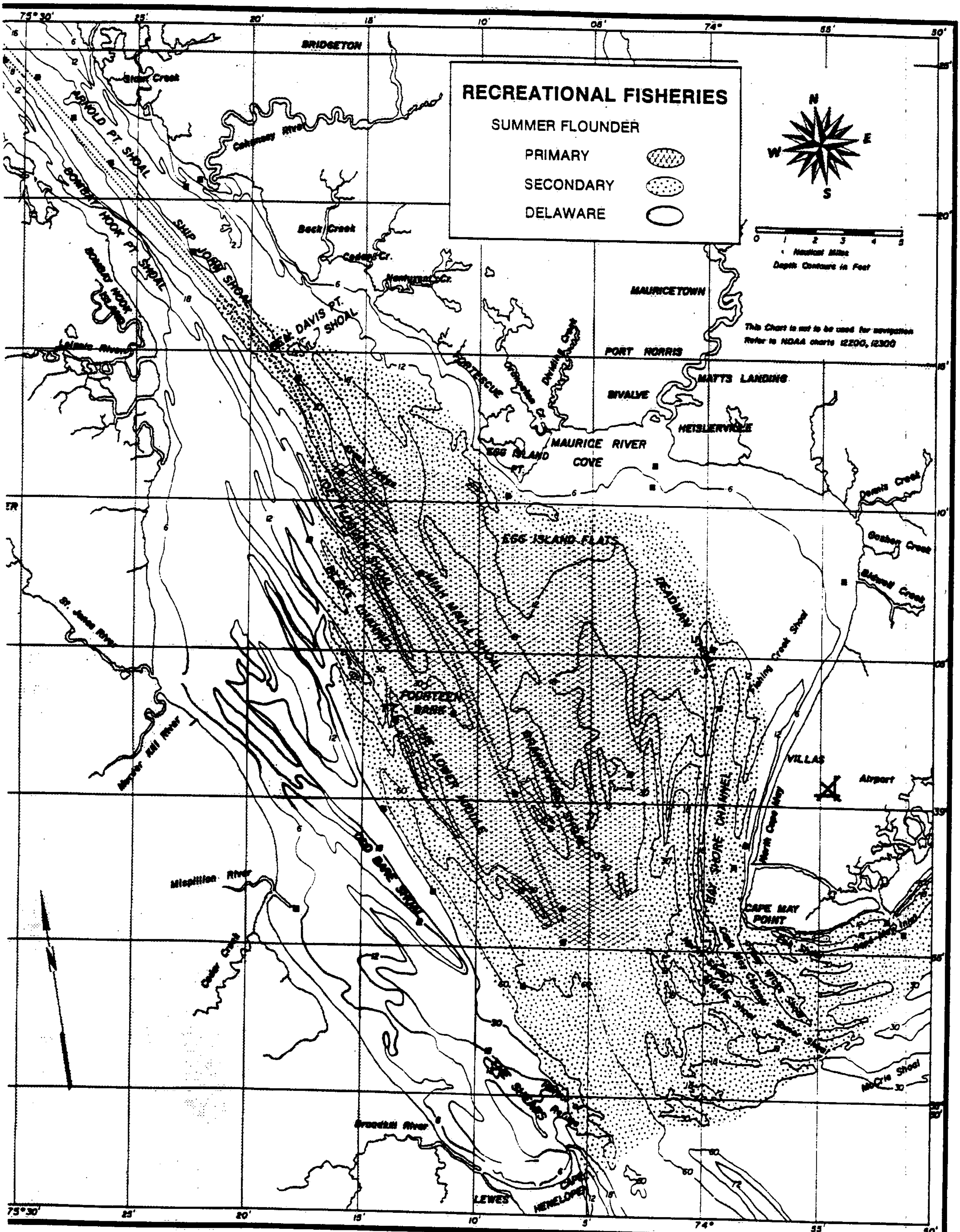
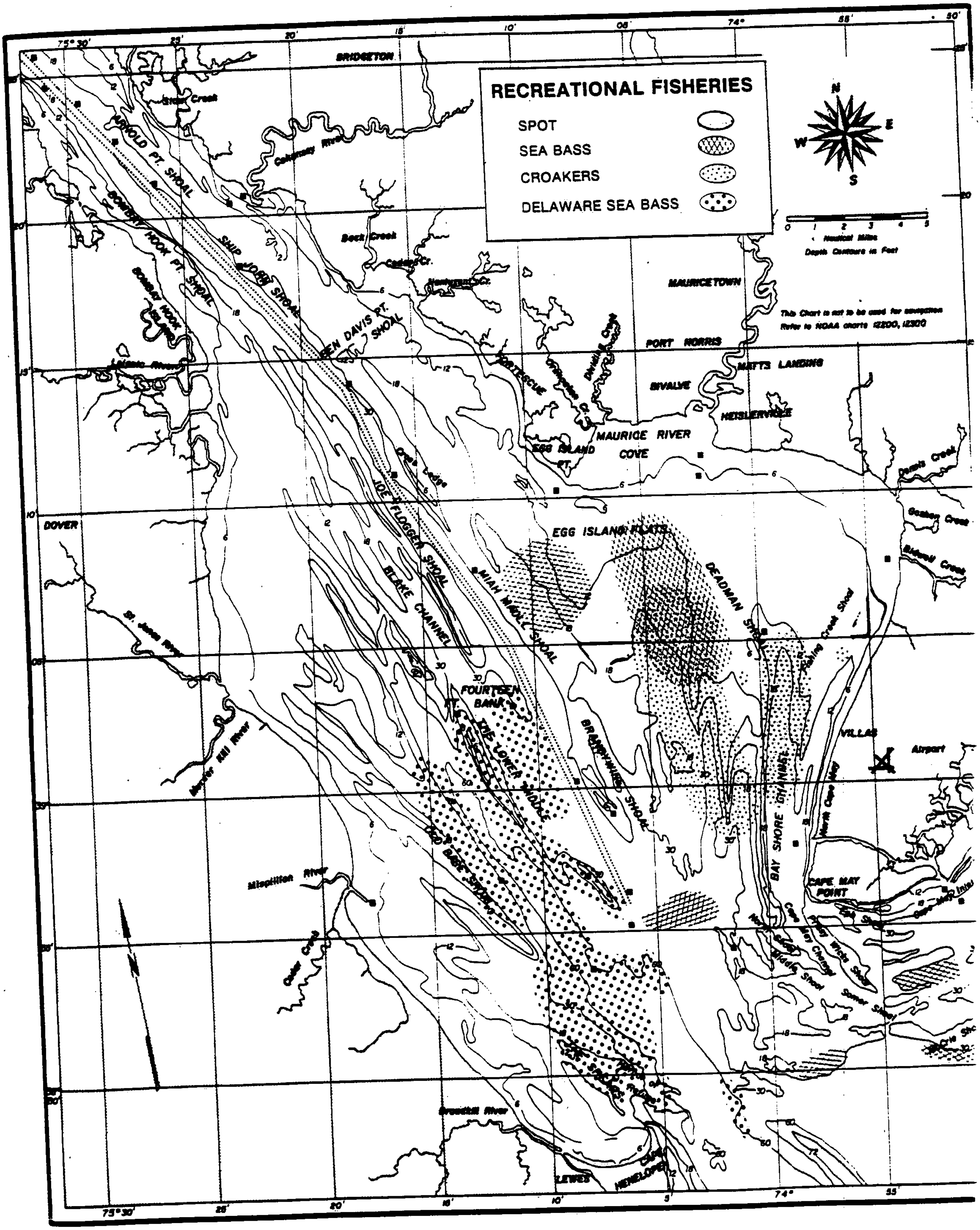
25'
20'
15'
10'
05'
74°
55'
50'

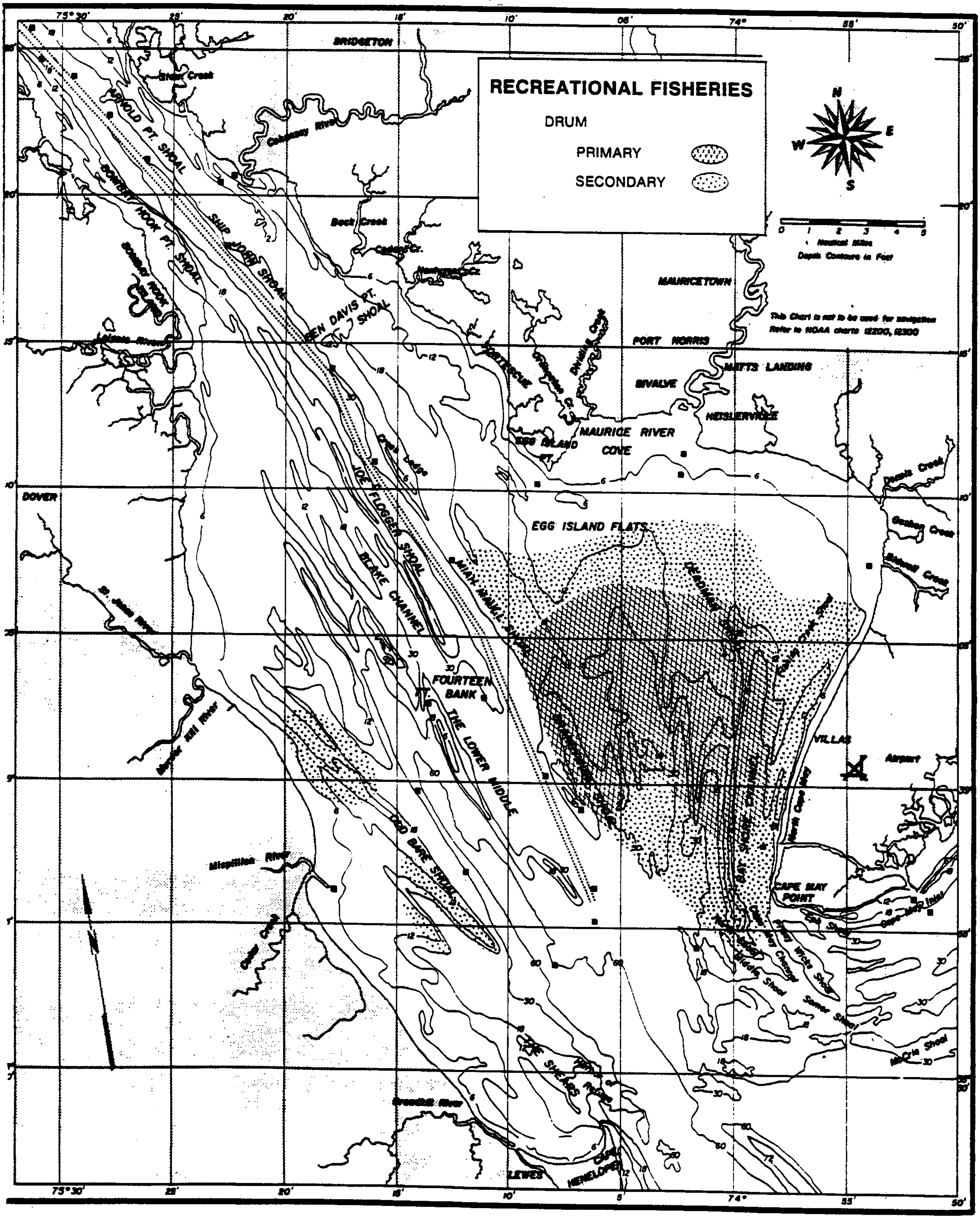

RECREATIONAL FISHERIES
BLUEFISH
PRIMARY
SECONDARY
DELAWARE
N
S
E
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12300, 12300
BRIDGETON
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND PT.
EGG ISLAND FLATS
DOVER
FOURTEEN FT. BANK
CAPE MAY POINT
VILLAS
Airport
LEWES
ARNOLD PT. SHOAL
SHIP JOHN SHOAL
BAY SHORE CHANNEL
75°30'
25'
20'
15'
10'
05'
74°
55'


RECREATIONAL FISHERIES
SUMMER FLOUNDER
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
SHIP JOHN SHOAL
BEN DAVIS PT. SHOAL
Back Creek
Cedar Cr.
MAURICETOWN
PORT NORRIS
FORTESCUE
BIVALVE
MATTS LANDING
HEISLERVILLE
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
DEADMAN SHOAL
Dennis Creek
Goshen Creek
Bidwell Creek
Fishing Creek Shoal
St. Jones River
Murderkill River
FOURTEEN FT. BANK
VILLAS
Airport
North Cape May
BAY SHORE CHANNEL
CAPE MAY POINT
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENLOPEN
McCrie Shoal

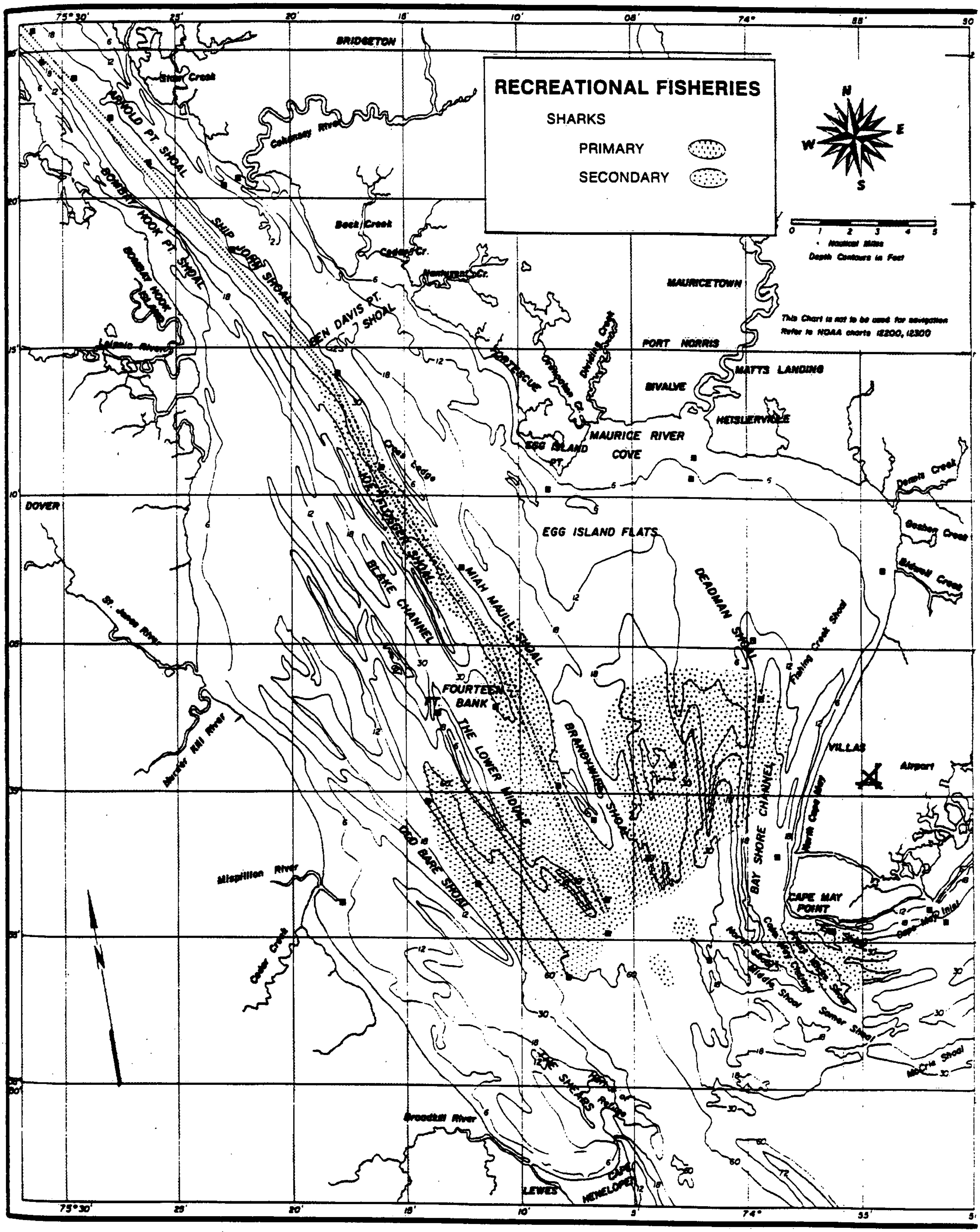


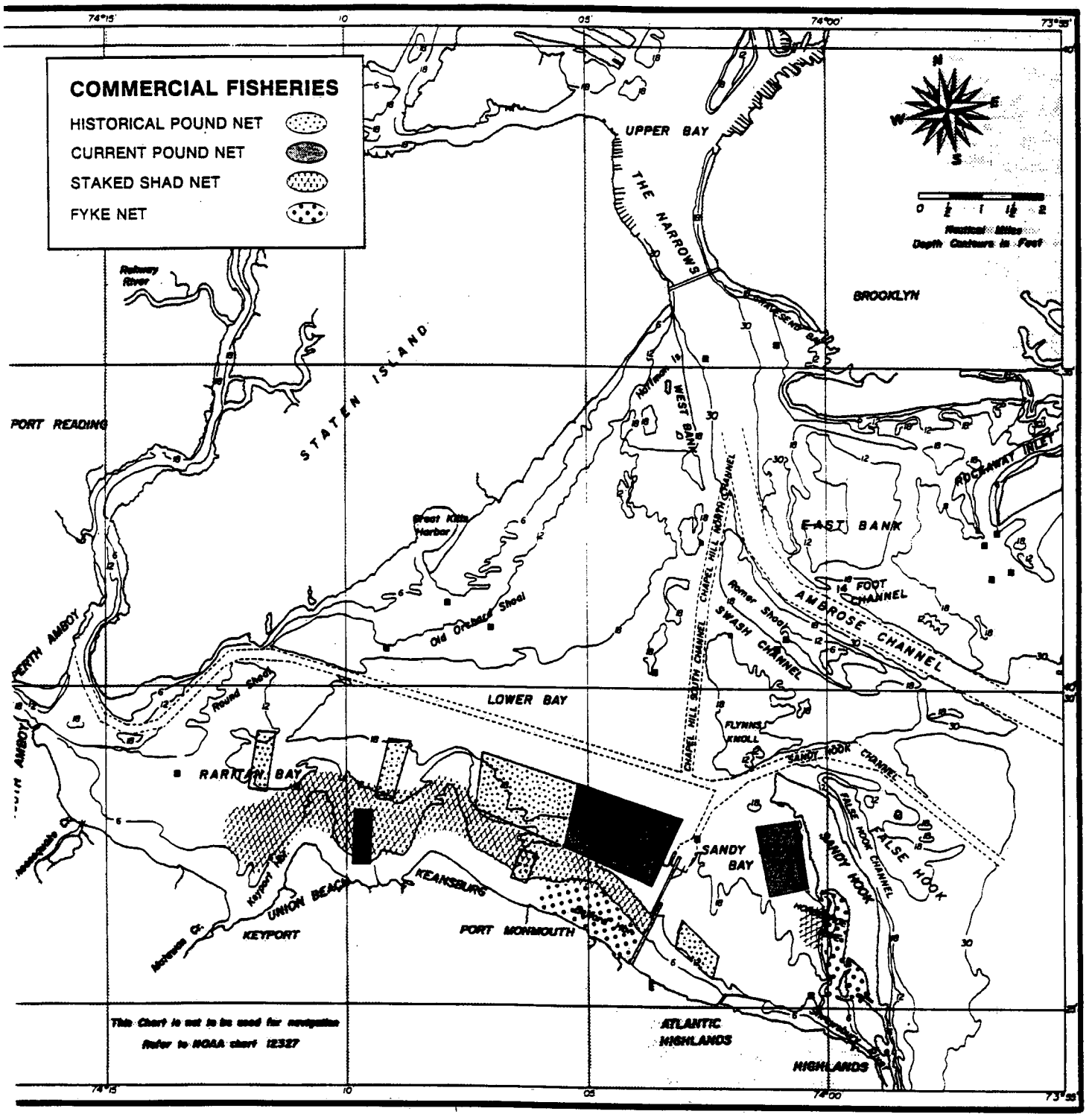
RECREATIONAL FISHERIES
SPOT
SEA BASS
CROAKERS
DELAWARE SEA BASS
N
S
E
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
SHIP JOHN SHOAL
Back Creek
Cedar Cr.
MAURICETOWN
BEN DAVIS PT. SHOAL
PORT NORRIS
MATTS LANDING
BIVALVE
FORTESCUE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND PT.
Cross Ledge
Dennis Creek
Goshen Creek
DOVER
EGG ISLAND FLATS
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
DEADMAN SHOAL
Bidwell Creek
St. Jones River
FOURTEEN FT. BANK
BRANDYWINE SHOAL
THE LOWER MIDDLE
VILLAS
Airport
BAY SHORE CHANNEL
Murderkill River
OLD BAR SHOAL
Mispillion River
CAPE MAY POINT
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN
75° 30'
25'
20'
15'
10'
05'
74°
55'
50'

25

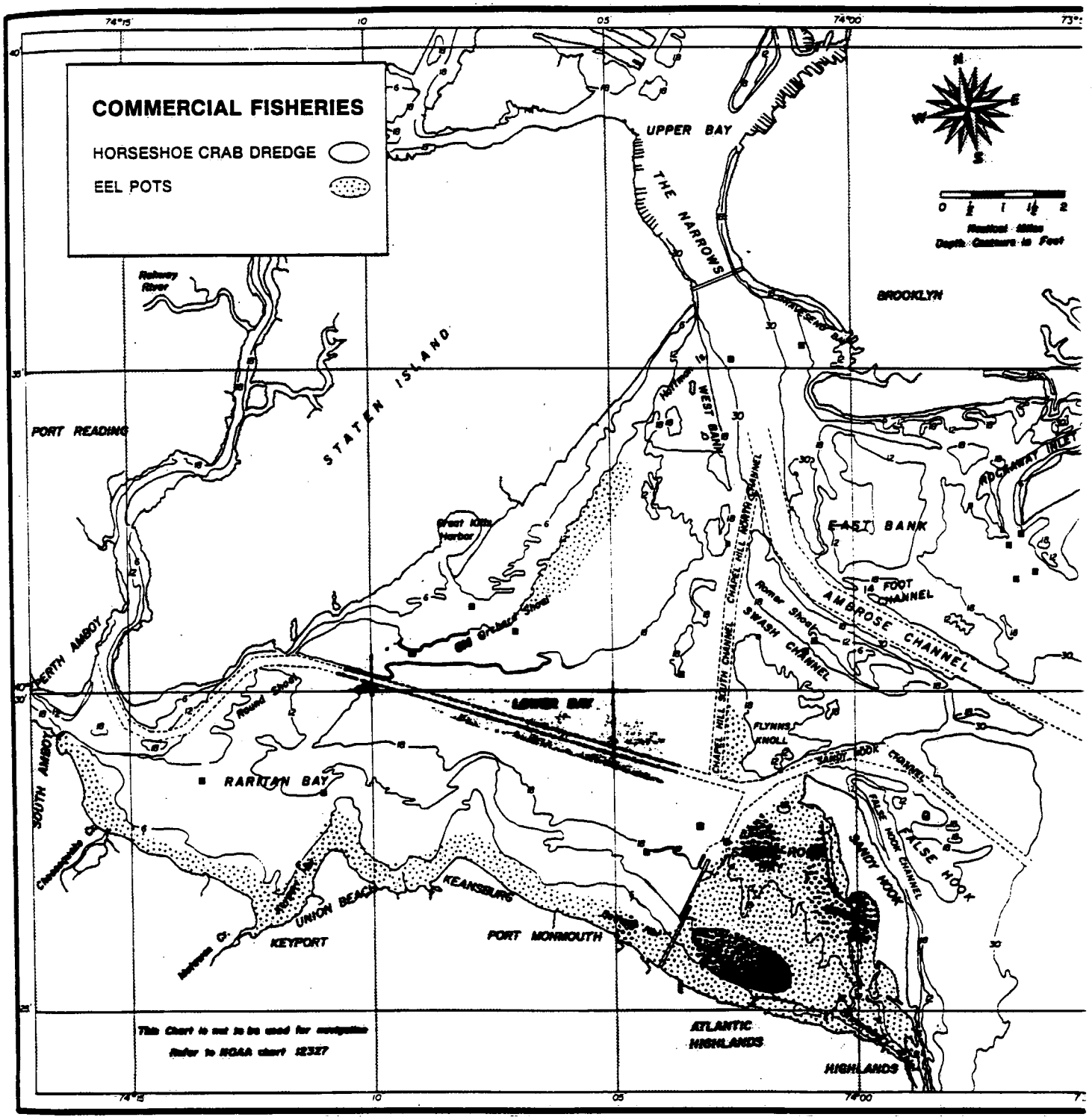

RECREATIONAL FISHERIES
DRUM
PRIMARY
SECONDARY
N
S
E
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND FLATS
DOVER
FOURTEEN
BANK
THE LOWER MIDDLE
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
BEN DAVIS PT.
SHOAL
SHIP JOHN SHOAL
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
FORTESCUE
EGG ISLAND
VILLAS
Airport
CAPE MAY
POINT
OLD BARE SHOAL
THE SHEARS
LEWES
CAPE
HENELOPEN
McCrie Shoal
Back Creek
Mispillion River
Broadkill River
75°30'
25'
20'
15'
10'
05'
74°
55'
50'

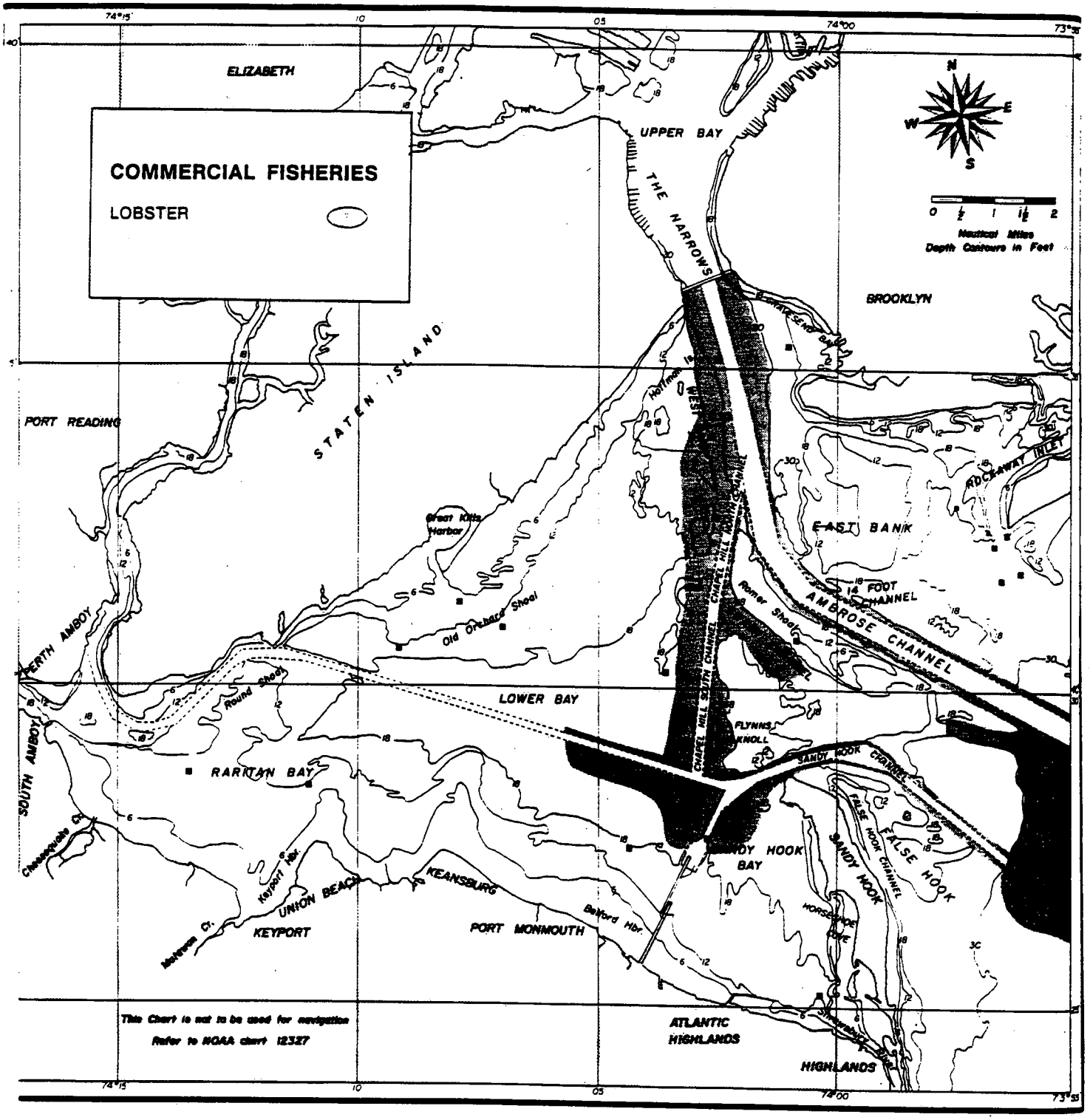
26


RECREATIONAL FISHERIES
SHARKS
PRIMARY
SECONDARY
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Stow Creek
Cohansey River
Back Creek
Cedar Cr.
Nantuxent Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
FORTESCUE
MAURICE RIVER
COVE
EGG ISLAND PT.
EGG ISLAND FLATS
DOVER
ARNOLD PT. SHOAL
BOMBAY HOOK PT. SHOAL
SHIP JOHN SHOAL
BEN DAVIS PT. SHOAL
Leipsic River
St. Jones River
Murderkill River
Mispillion River
Cedar Creek
Broadkill River
JOE FLOGGER SHOAL
MIAH MAULL SHOAL
BLAKE CHANNEL
FOURTEEN FT. BANK
THE LOWER MIDDLE
OLD BARE SHOAL
BRANDYWINE SHOAL
DEADMAN SHOAL
Fishing Creek Shoal
BAY SHORE CHANNEL
VILLAS
Airport
North Cape May
CAPE MAY POINT
Cape May Inlet
Dennis Creek
Goshen Creek
Bidwell Creek
Somers Shoal
McCrie Shoal
THE SHEARS
LEWES
CAPE HENELOPEN
75°30'
25'
20'
15'
10'
05'
74°
55'


COMMERCIAL FISHERIES
HISTORICAL POUND NET
CURRENT POUND NET
STAKED SHAD NET
FYKE NET
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Railway River
Great Kills Harbor
Old Orchard Shoal
WEST BANK
Hoffman
EAST BANK
ROCKAWAY INLET
CHAPEL HILL SOUTH CHANNEL
CHAPEL HILL NORTH CHANNEL
Romer Shoal
SWASH CHANNEL
AMBROSE CHANNEL
14 FOOT
PERTH AMBOY
Raritan Shoal
LOWER BAY
FLYNNS KNOLL
SANDY HOOK CHANNEL
RARITAN BAY
SANDY BAY
FALSE HOOK CHANNEL
SANDY HOOK
FALSE HOOK
Keyport Flat
UNION BEACH
KEANSBURG
KEYPORT
PORT MONMOUTH
Matawan Cr.
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327
74°15'
10
05'
74°00'
73°55'

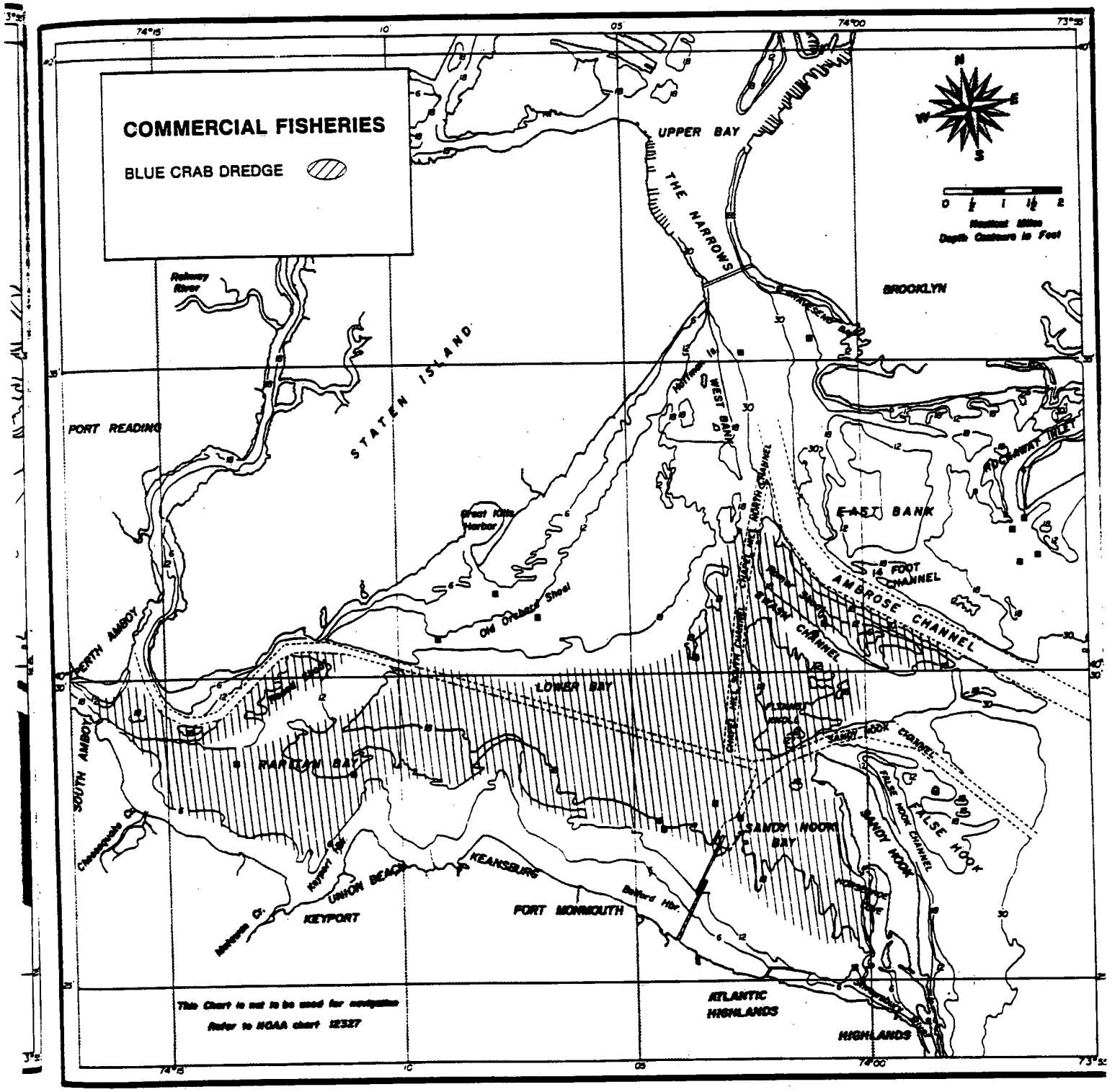
28

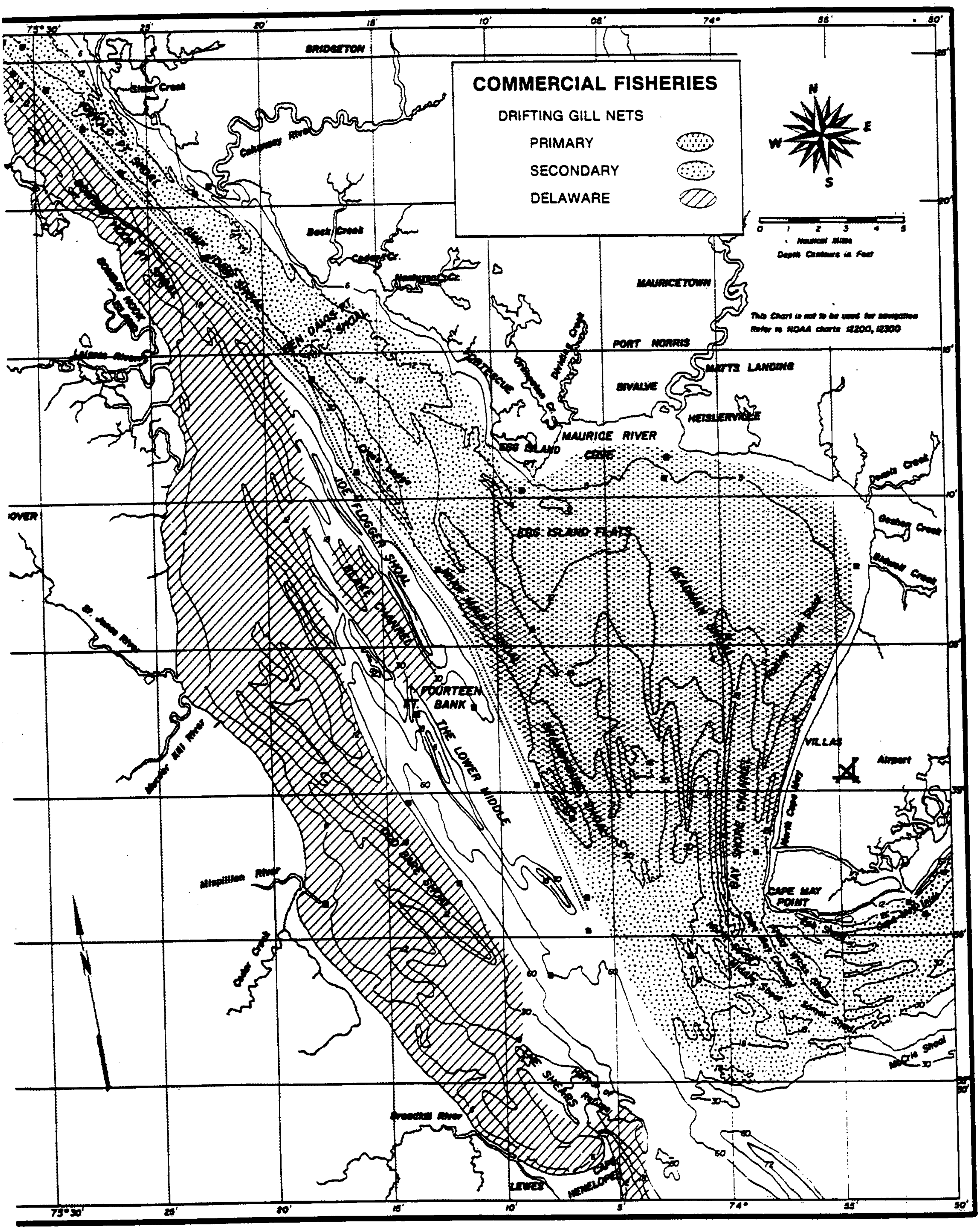
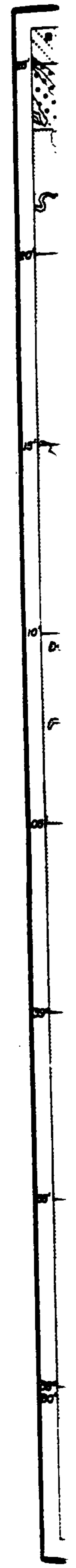

COMMERCIAL FISHERIES
HORSESHOE CRAB DREDGE
EEL POTS
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
PERTH AMBOY
SOUTH AMBOY
RARITAN BAY
LOWER BAY
EAST BANK
AMBROSE CHANNEL
SWASH CHANNEL
FLYNNS KNOLL
SANDY HOOK
FALSE HOOK
KEYPORT
UNION BEACH
KEANSBURG
PORT MONMOUTH
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327


COMMERCIAL FISHERIES
LOBSTER
ELIZABETH
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Great Kills Harbor
Old Orchard Shoal
PERTH AMBOY
SOUTH AMBOY
Round Shoal
LOWER BAY
RARITAN BAY
Chesequake Ck.
Keyport Hbr.
UNION BEACH
KEANSBURG
KEYPORT
Matawan Ck.
PORT MONMOUTH
Belford Hbr.
Hoffman Isl.
CHAPEL HILL SOUTH CHANNEL
CHAPEL HILL NORTH CHANNEL
EAST BANK
ROCKAWAY INLET
Romer Shoal
14 FOOT CHANNEL
AMBROSE CHANNEL
FLYNNS KNOLL
SANDY HOOK CHANNEL
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK CHANNEL
FALSE HOOK
HORSESHOE COVE
ATLANTIC HIGHLANDS
HIGHLANDS
N
E
S
W
0 ½ 1 1½ 2
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA chart 12327
74°15'
10
05
74°00
73°55'
40°

30

30


COMMERCIAL FISHERIES
BLUE CRAB DRECGE
UPPER BAY
THE NARROWS
BROOKLYN
STATEN ISLAND
PORT READING
Rahway River
Great Kills Harbor
Old Orchard Shoal
PERTH AMBOY
SOUTH AMBOY
RARITAN BAY
LOWER BAY
EAST BANK
WEST BANK
NORTH CHANNEL
SWASH CHANNEL
AMBROSE CHANNEL
14 FOOT CHANNEL
SANDY HOOK CHANNEL
SANDY HOOK BAY
SANDY HOOK
FALSE HOOK
FALSE HOOK CHANNEL
ROCKAWAY INLET
KEANSBURG
UNION BEACH
KEYPORT
FORT MONMOUTH
Belford Hbr.
ATLANTIC HIGHLANDS
HIGHLANDS
This Chart is not to be used for navigation
Refer to NOAA chart 12327


COMMERCIAL FISHERIES
DRIFTING GILL NETS
PRIMARY
SECONDARY
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER
COVE
EGG ISLAND FLATS
FORTESCUE
Back Creek
Dennis Creek
Goshen Creek
Bidwell Creek
VILLAS
Airport
CAPE MAY
POINT
JOE FLOGGER SHOAL
FOURTEEN
BANK
THE LOWER MIDDLE
BRANDYWINE SHOAL
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE
HENLOPEN
Murderkill River
St. Jones River
DOVER
75° 30'
25'
20'
15'
10'
05'
74°
55'
50'
5'


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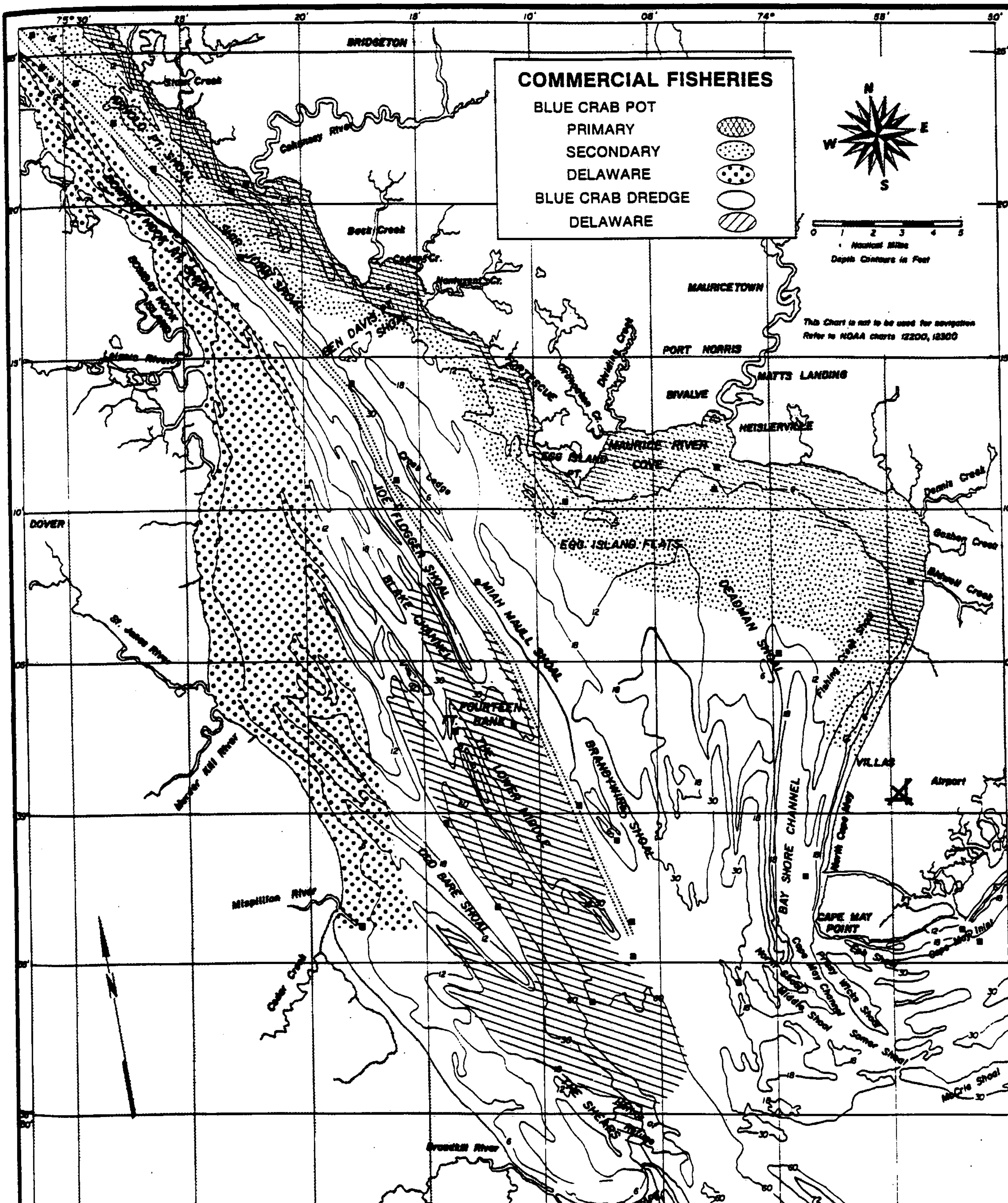
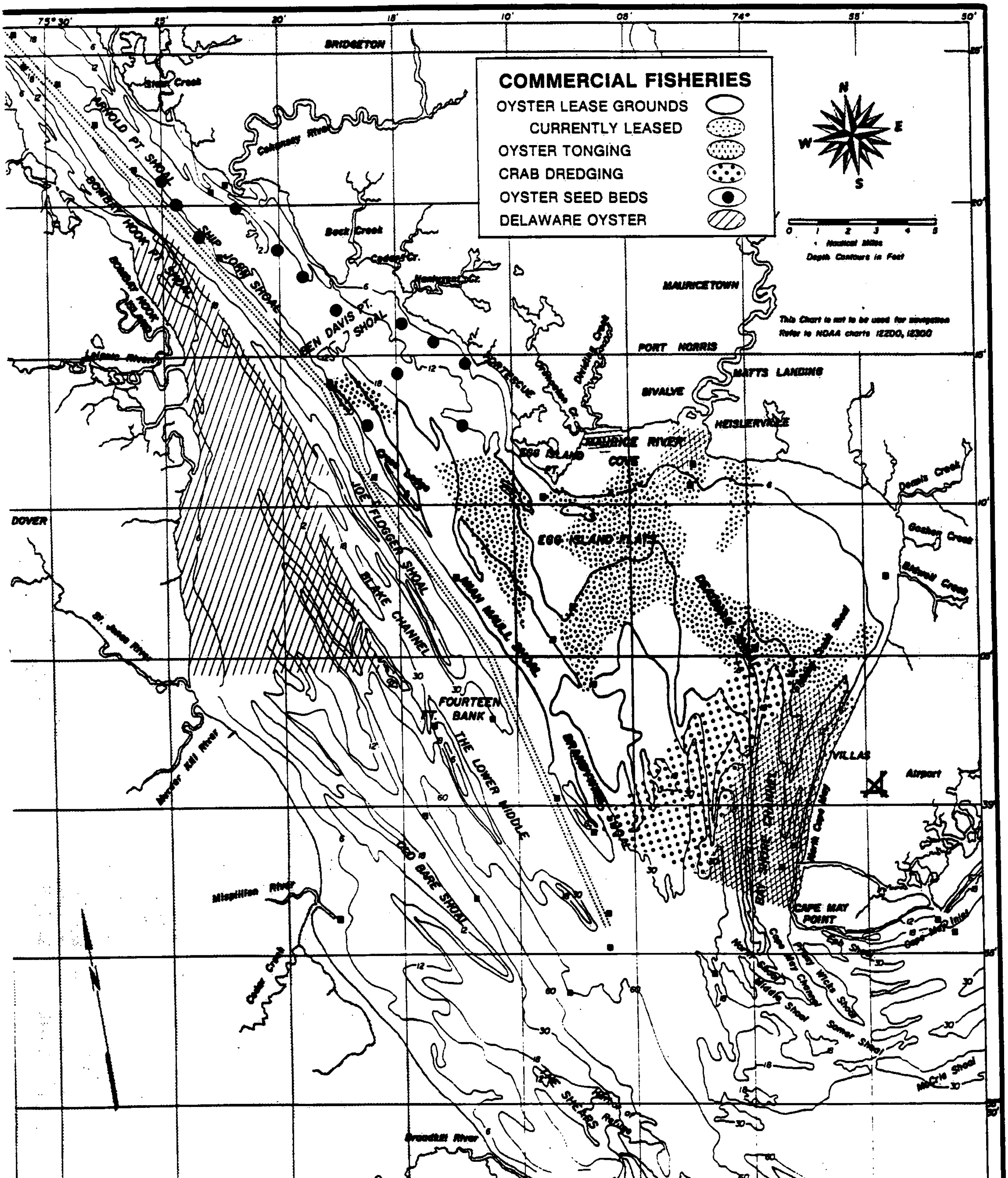

COMMERCIAL FISHERIES
BLUE CRAB POT
PRIMARY
SECONDARY
DELAWARE
BLUE CRAB DREDGE
DELAWARE
N
E
S
W
Nautical Miles
Depth Contours in Feet
This Chart is not to be used for navigation
Refer to NOAA charts 12200, 12300
BRIDGETON
Cohansey River
Back Creek
Cedar Cr.
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
MAURICE RIVER COVE
EGG ISLAND PT.
EGG ISLAND FLATS
FORTESCUE
BEN DAVIS PT. SHOAL
DEADMAN SHOAL
JOE FLOGGER SHOAL
BLAKE CHANNEL
MIAH MAULL SHOAL
BRANDYWINE SHOAL
FOURTEEN FT. BANK
THE LOWER MIDDLE
OLD BARE SHOAL
BAY SHORE CHANNEL
Dennis Creek
Goshen Creek
Bidwell Creek
Fishing Creek
VILLAS
Airport
North Cape May
CAPE MAY POINT
Cape May Inlet
Cape May Channel
Prissy Wicks Shoal
Middle Shoal
Somer Shoal
McCrie Shoal
DOVER
St. Jones River
Murder Kill River
Mispillion River
Cedar Creek
Broadkill River
LEWES
CAPE HENELOPEN
THE SHEARS
75° 30'
25'
20'
15'
10'
5'
74°
55'
50'


COMMERCIAL FISHERIES
OYSTER LEASE GROUNDS
CURRENTLY LEASED
OYSTER TONGING
CRAB DREDGING
OYSTER SEED BEDS
DELAWARE OYSTER
N
E
S
W
This Chart is not to be used for navigation
Refer to NOAA charts 12300, 12300
BRIDGETON
MAURICETOWN
PORT NORRIS
MATTS LANDING
BIVALVE
HEISLERVILLE
EGG ISLAND PT.
COVE
EGG ISLAND FLATS
DOVER
FOURTEEN FT. BANK
THE LOWER MIDDLE
BLAKE CHANNEL
JOE FLOGGER SHOAL
SHIP JOHN SHOAL
ARNOLD PT. SHOAL
BEN DAVIS PT. SHOAL
FORTESCUE
VILLAS
Airport
CAPE MAY POINT
LEWES
BRANDYWINE SHOAL
THE SHEARS
Mispillion River
Broadkill River
75° 30'
25'
20'
15'
10'
05'
74°
55'
50'

INTRODUCTION

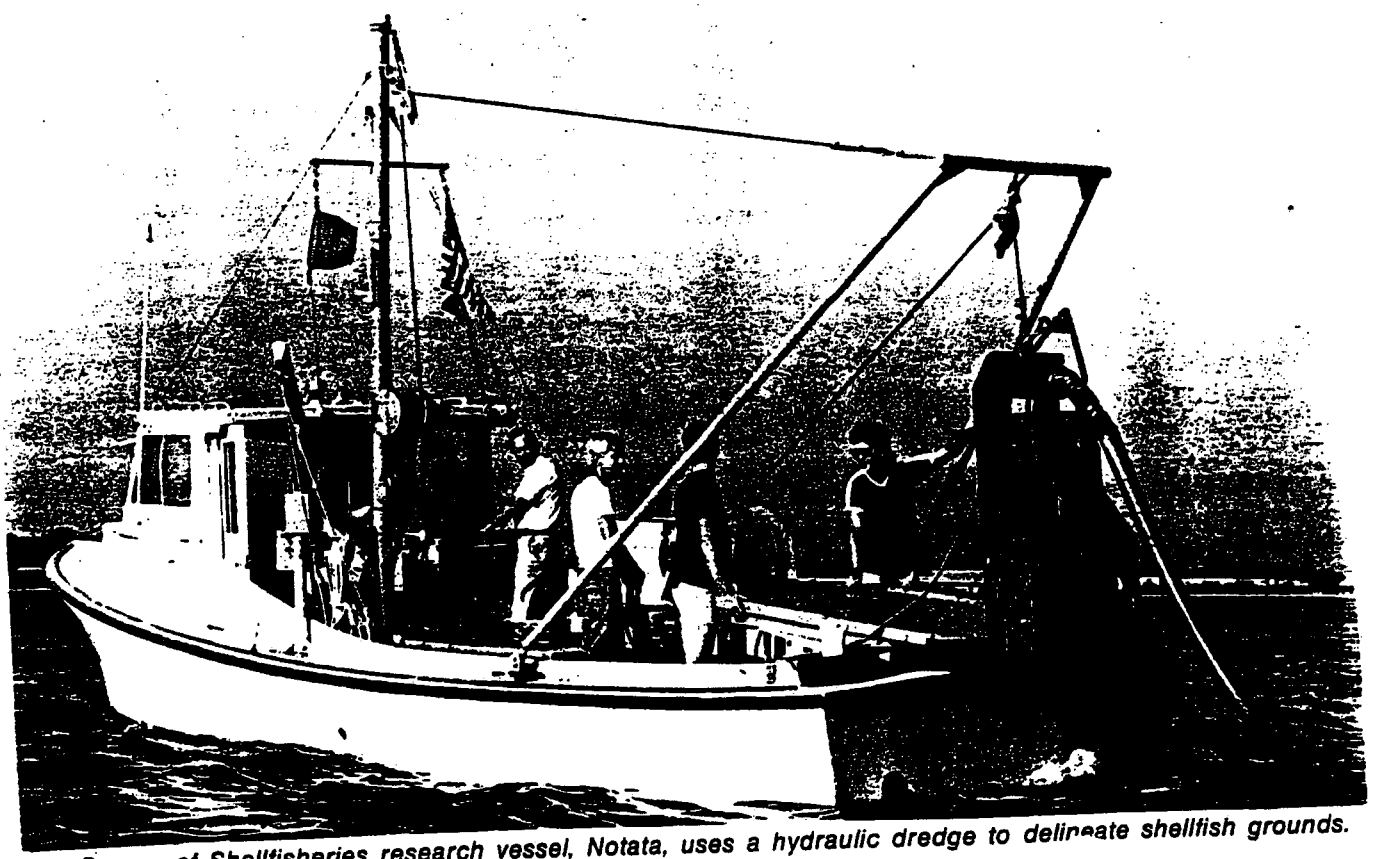
Since the harvest of shellfish has been prohibited in Raritan Bay and Sandy Hook Bay in 1964, it was not possible to delineate current fishing areas through the process of fisherman interview. Instead, the Bureau of Shellfisheries initiated a shellfish inventory of these areas in 1983.

The primary purpose for conducting an inventory was to provide current information on the distribution and abundance of the various shellfish species. The data collected forms the basis on which management programs are developed. Before a resource can be effectively managed information on resource abundance, location and its well-being must be known.

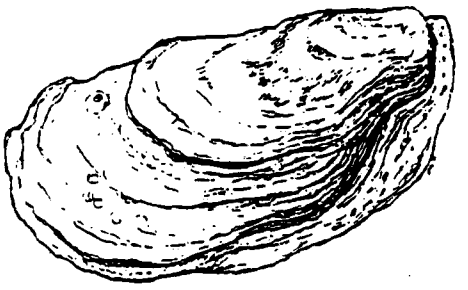
The inventory data also provide an additional benefit when conducting assessments of coastal development projects. Activities such as dredging, spoil disposal, pipeline or cable routing, discharge of sewage effluent, marina construction as well as residential and commercial development along the coast have the potential to adversely affect the shellfish resources by contamination or destruction of shellfish populations, as well as the destruction of its habitat. The information derived from the inventory program is extremely useful in the development review process and serves to protect important shellfish beds from the negative impacts associated with these activities.

The shellfish inventory program was designed primarily to sample hard clam populations because the most current historical information indicated that this species was the most abundant and widely distributed. The sampling technique employed was also capable of collecting other shellfish species such as oysters, soft clams, surf clams and blue mussels.

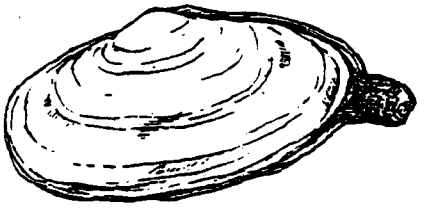
The inventory of Raritan Bay and Sandy Hook Bay has been the first systematic shellfish survey conducted of New Jersey estauries in over twenty years. The Bureau of Shellfisheries is continuing this program throughout all of the state's estauries.



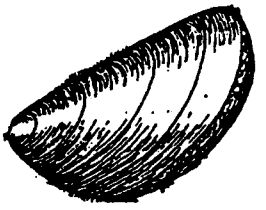
The Bureau of Shellfisheries research vessel, Notata, uses a hydraulic dredge to delineate shellfish grounds.



Oyster



Soft Clam



Blue Mussel

Hard Clam

METHODS

The sampling device was a miniature hydraulic clam dredge with a knife width of one foot that was towed from a research vessel. Water is pumped from a pump onboard the vessel down to the dredge manifold which has a series of nozzles. Water pumped through the downward directed nozzles loosens the sediment ahead of the knife while the rear facing nozzles wash sediment from the basket. The dredge basket is designed to retain all hard clams 1-3/16 inches or greater in length.

Sampling stations were established at regular intervals throughout Raritan Bay and Sandy Hook Bay. Over two hundred stations were sampled throughout the course of this program. Two tows of approximately 100 feet each were sampled at each station and the density of hard clams was determined by averaging the catch of the two tows. For the purpose of delineating the general abundance pattern of the hard clam resource four classifications of abundance were established- none, occurrence, moderate density and high density. Adjacent stations within the same density classification were grouped together thus giving the general abundance distributions.

Quantitative results for other shellfish species collected (oysters, soft clams, surf clams, mussels) were not deemed as useful because the sampling gear was not specifically designed for their capture. However, the information collected on these other species was sufficient to permit delineation of the significant beds.

HARVEST METHODS

Soft clams are harvested by a method known as "hoe and net" which is rather unique to New Jersey. All harvesting is conducted in shoal areas with the harvester in the water. The harvester works the hoe up and down creating a depression in the bottom. As the clams are dislodged from the sediment they become buoyant and are scooped up with the net. No mechanical gear is allowed for harvest.

Hard clams are harvested by a variety of methods. However, laws in New Jersey restrict the harvest to hand employed gear only. No mechanical harvest or dredging is permitted. Three commonly used harvest methods in New Jersey include treading, tonging and raking. In treading, the clammer, proceeding backwards, shuffles his feet through the mud. When the hard edge of a clam is encountered, the clammer takes a breath, ducks under and pulls the clam out of the bottom. The equipment required for treading includes an intertube and basket to hold clams and thin rubber boots and gloves to protect feet and hands.

Tonging is done from an anchored boat. The tong handles are opened and closed, forcing the tong's teeth to scrape the upper two or three inches of substrate and pick up loosened clams. The area around the entire boat is worked before the anchor is moved.

In raking, the third method, the boat is allowed to drift while the rake is dragged across the bottom. The handle is worked up and down by hand to insure a smooth and continuous drag. The long teeth of the rake lift the clams out of the bottom and the mesh basket at the back of the rake holds the clams until the rake is lifted into the boat.

FISHERY

All of Raritan Bay and Sandy Hook Bay is moderately polluted and is classified as condemned for the direct market harvest of shellfish. Consequently, there is no recreational fishery and, prior to 1983, only a small commercial soft clam fishery existed. Following the shellfish inventory of 1983 a commercial fishery for hard clams was initiated under closely controlled conditions. At present, the only shellfish species for which a commercial fishery exists are hard and soft clams.

Because the water of these areas is moderately polluted, the shellfish must be cleansed prior to consumption. When polluted clams are placed in a clean water environment they have the ability to flush bacterial and vial contaminants out of their digestive system through a natural cleansing mechanism. This cleansing process is accomplished through three State supervised programs known as soft clam depuration, hard clam depuration and hard clam relay.

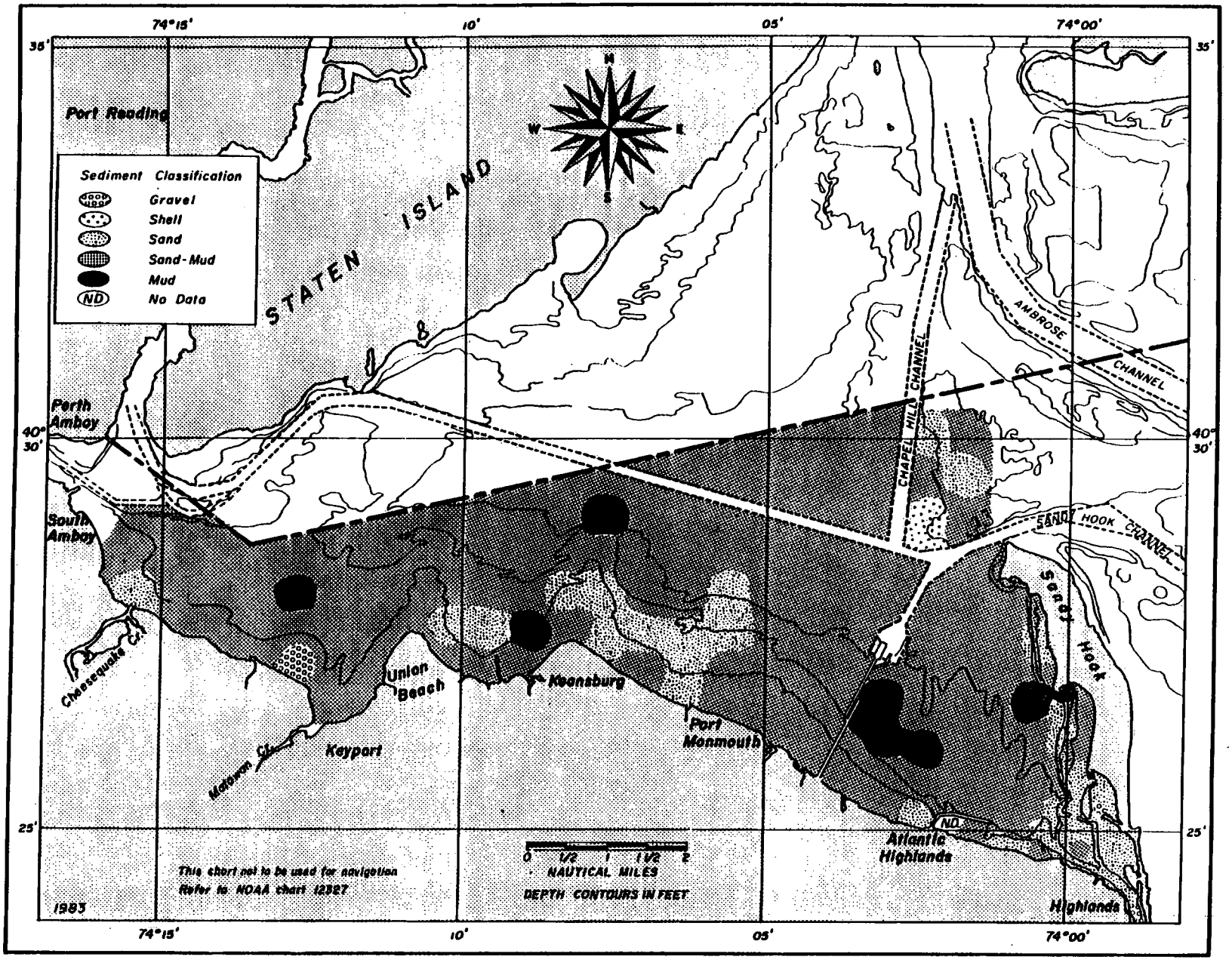
Soft clam and hard clam depuration are similar processes with slightly different operating requirements because of the physiological differences between the two species. Both operations start with the harvest of the clams from moderately polluted areas. The clams are then transported to a depuration plant. Once in the plant the clams are placed in tanks and flooded with purified water for 48 hours. Through their natural feeding activity they eliminate harmful contaminants from their system and are acceptable for marketing and consumption.

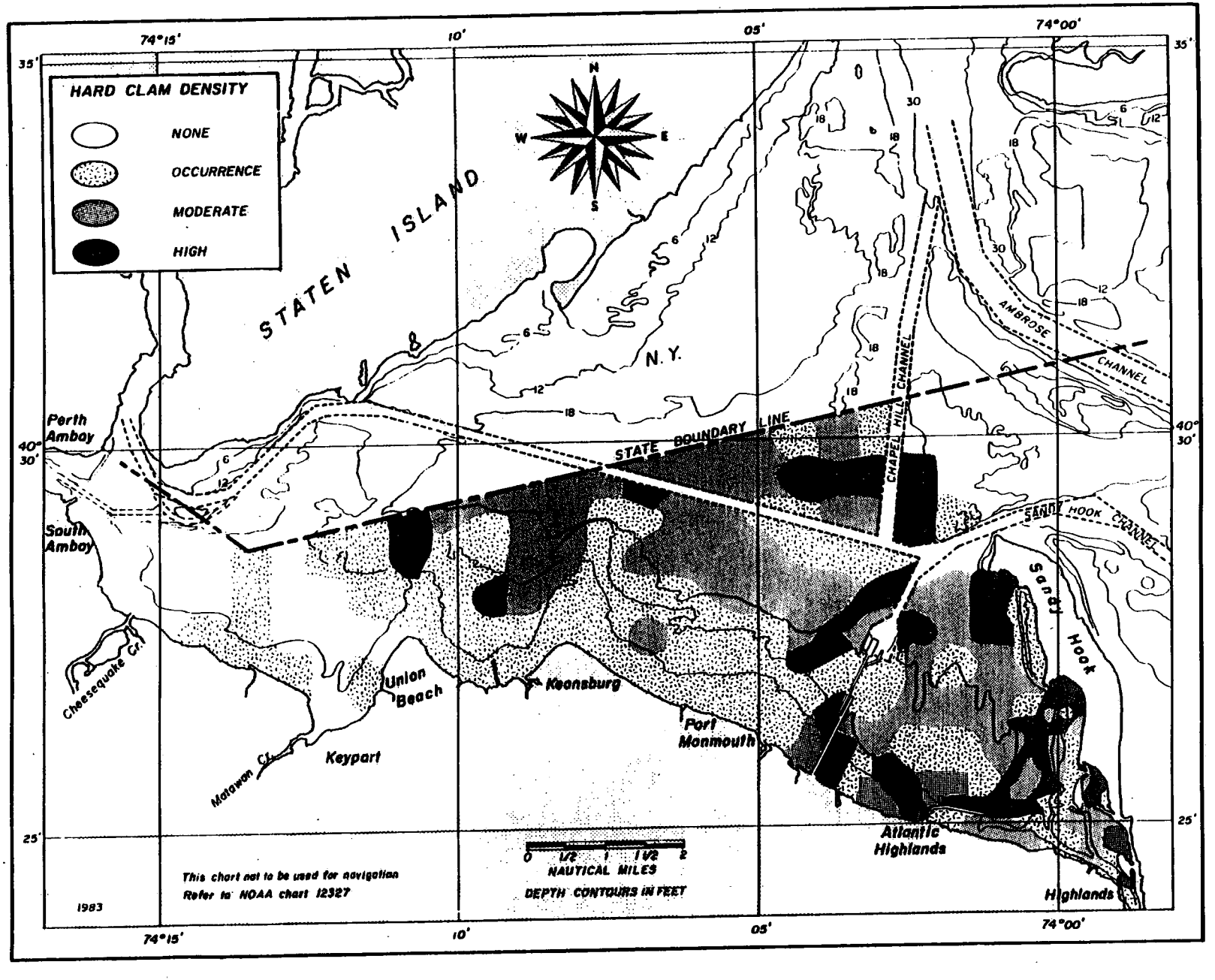
The hard clam relay also begins with the harvest of clams from moderately polluted waters. The clams are then transplanted to "relay lots", leased from the State by shellfishermen, which are in areas of good water quality. Following a thirty day cleansing period the clams are tested and available for harvesting and subsequent marketing.

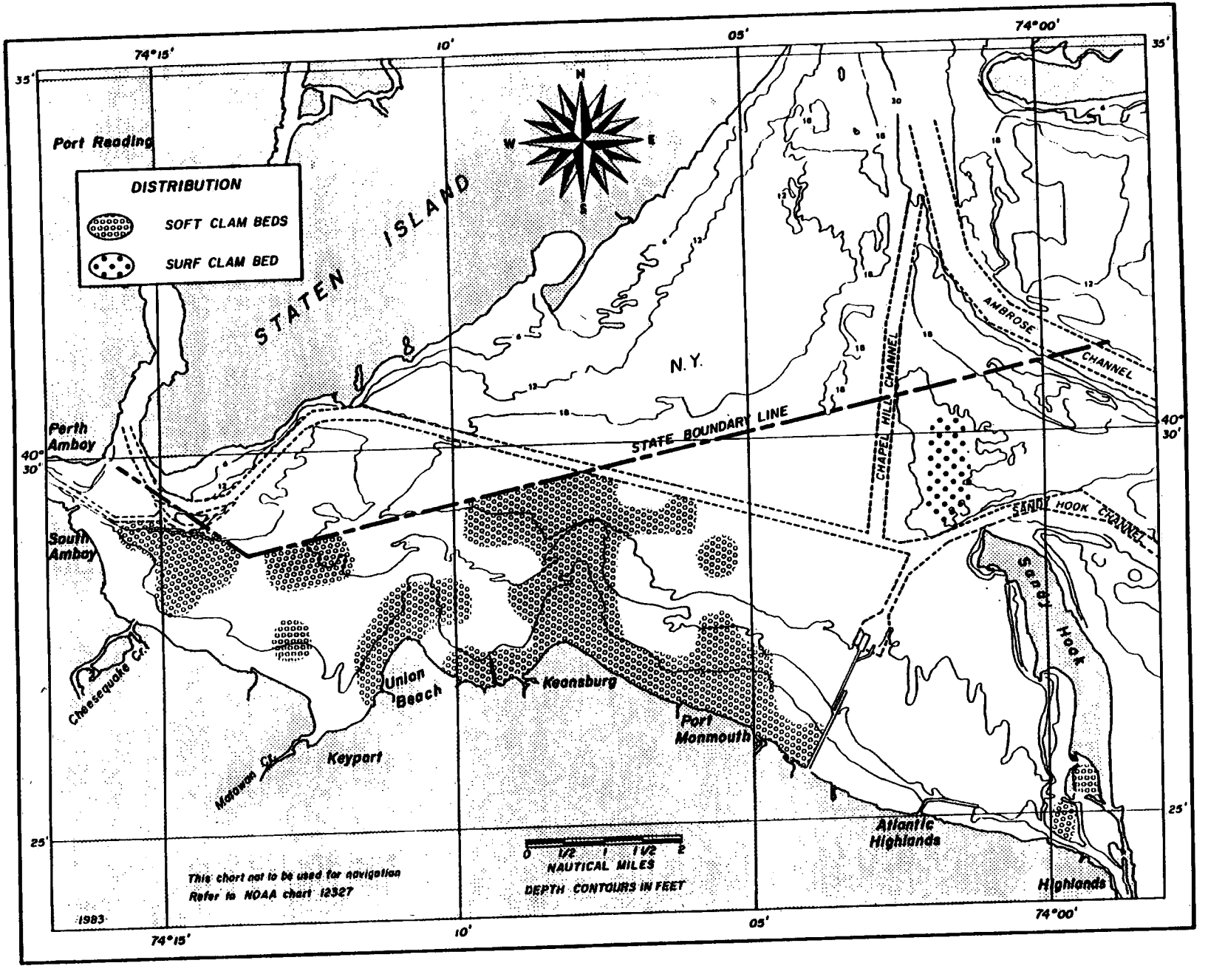
There are no conservation associated seasonal restrictions on the harvest of hard or soft clams. For the most part they are harvested year round subject to weather and market conditions.

The soft clam depuration program is responsible for practically all of the commercial landings of soft clams in New Jersey. The primary reason is that the significant soft clam resource is located in northern Monmouth County waters all of which are closed to direct market harvest of shellfish.

The hard clam relay and depuration program accounted for 25 percent of the total commercial hard clam landings in New Jersey in 1984-86. The remainder of the landings were from waters of the State where harvesting for direct marketing is approved. Although there is increasing interest and activity in the aquaculture of hard clams in New Jersey the majority of the landings come from natural stock.


74°15'
10'
05'
74°00'
35'
40°
30'
25'
Port Reading
STATEN ISLAND
Sediment Classification
Gravel
Shell
Sand
Sand-Mud
Mud
ND
No Data
Perth Amboy
South Amboy
Chesequake Cr.
Union Beach
Keansburg
Keyport
Matawan Cr.
Port Monmouth
Sandy Hook
Atlantic Highlands
Highlands
CHAPEL HILL CHANNEL
AMBROSE CHANNEL
SANDY HOOK CHANNEL
ND
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET
This chart not to be used for navigation
Refer to NOAA chart 12327
1983


HARD CLAM DENSITY
NONE
OCCURRENCE
MODERATE
HIGH
STATEN ISLAND
N.Y.
STATE BOUNDARY LINE
CHAPEL HILL CHANNEL
AMBROSE CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Keyport
Matawan Cr.
Port Monmouth
Sandy Hook
Atlantic Highlands
Highlands
74°15'
10'
05'
74°00'
35'
40° 30'
25'
This chart not to be used for navigation
Refer to NOAA chart 12327
1983
0 1/2 1 1 1/2 2
NAUTICAL MILES
DEPTH CONTOURS IN FEET


74°15'
10'
05'
74°00'
35'
40°
30'
25'
Port Reading
DISTRIBUTION
SOFT CLAM BEDS
SURF CLAM BED
STATEN ISLAND
N.Y.
STATE BOUNDARY LINE
AMBROSE CHANNEL
CHAPEL HILL CHANNEL
SANDY HOOK CHANNEL
Perth Amboy
South Amboy
Cheesequake Cr.
Union Beach
Keansburg
Port Monmouth
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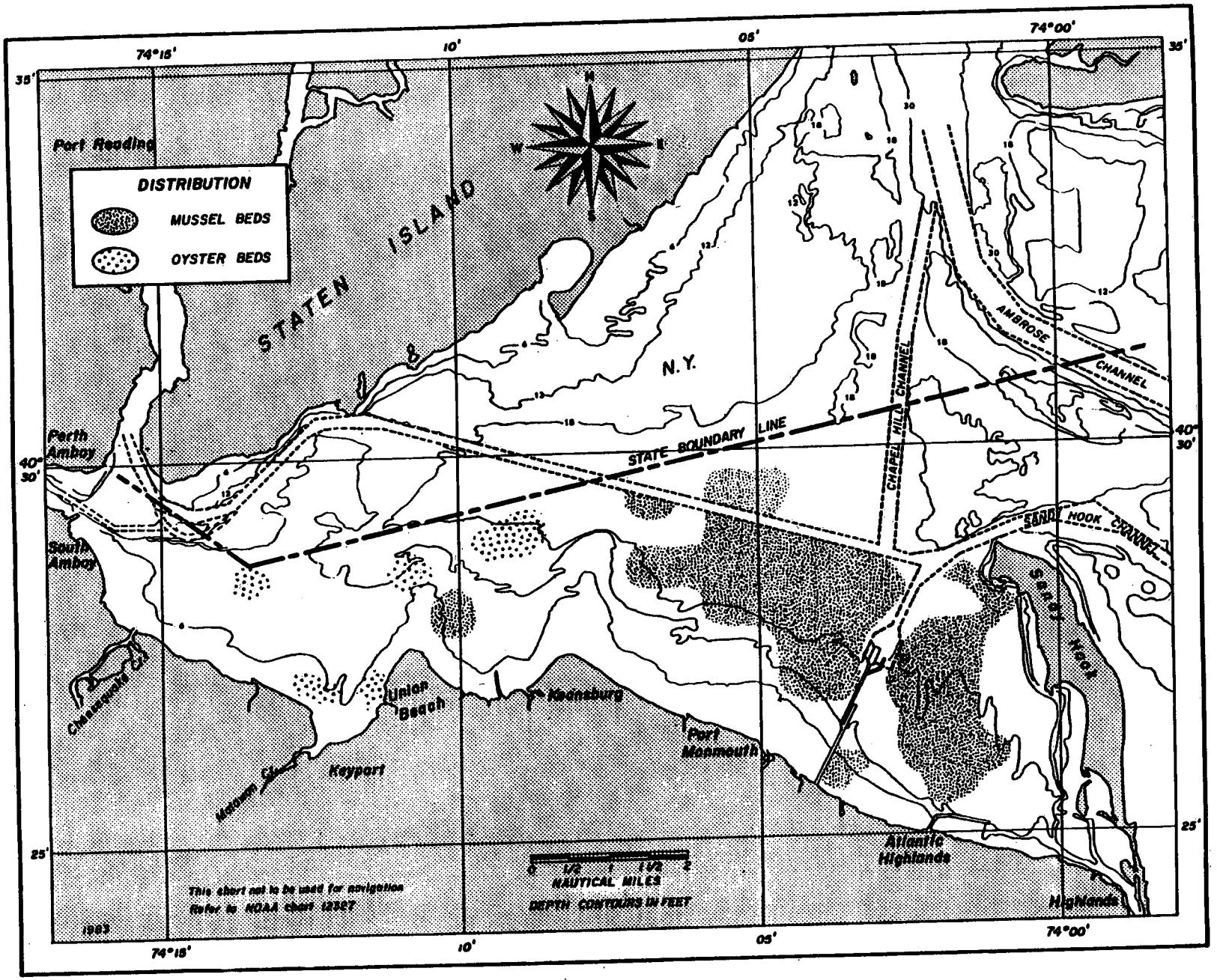
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South Amboy
Chesapeake City
Union Beach
Keansburg
Keyport
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NAUTICAL MILES
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Refer to NOAA chart 12327
1983

REFERENCE NO. 24

New Jersey
Fish & Wildlife DIGEST

1892-1992
100 Years of Conservation

FREE

A Summary of Rules and Management Information

New Jersey Department of Environmental Protection & Energy ■ Division of Fish, Game & Wildlife

Vol. 5 No. 4, April 1992

★★★ DIVISION CELEBRATES CENTENNIAL ★★★

Weakfish, Fluke & Other Rule Changes

by Thomas McCloy, Chief
Bureau of Marine Fisheries

During 1991, there have been a number of regulatory changes concerning marine species sought by New Jersey anglers, and 1992 promises to be an active year for implementation of various management measures. Those species highlighted here include weakfish, summer flounder (fluke) and striped bass.

Marine fisheries management can be a complex issue, because of the migratory nature of most species. As a result, regional and coastwide councils and commissions have been

weakfish harvested by otter trawls over time to be uniform for all fisheries in New Jersey. In addition, the commercial harvest of weakfish is prohibited during the periods from June 7 through June 30 and October 20 through December 31 with the exception of the otter trawl fishery during the latter closure period. It is also illegal to possess any weakfish [illegible] weakfish parts less than [illegible] inch minimum size. If weakfish are filleted at sea, the resultant fillets must have the skin attached and be at least

One Hundred Years of Conservation

by Bob McDowell, Director
Division of Fish, Game and Wildlife

This year marks the 100th anniversary of the Division of Fish, Game and Wildlife. As early as 1892, professionals in the field of wildlife management were working toward securing the future of fish and wildlife in our state.

Though concerns of citizens back then may have been a little different than today's issues, the underlying commitment to conservation—viewing our fish and wildlife as a valuable common resource that could, if managed properly, survive and flourish for generations to come while adding economic, aesthetic and

of each and every one of us to travel it together; to obey and enforce the management measures in effect.

Here within the division, our focus is forever on the future and like those wise early conservationists, we too, are taking advantage of and acting upon foresight and knowledge.

To commemorate those first steps toward conservation, we have planned a list of activities to help celebrate our 100th anniversary. I want to invite each and every one of you to take part in and enjoy this celebration.

Watch for an historical documentary currently being produced by the [illegible] New Jersey Network.

HOW TO REDUCE CONSUMER EXPOSURE TO FISH CONTAMINATED WITH TOXIC CHEMICALS (PCB's, DIOXINS, CHLORDANE, ETC.)

STATEWIDE ADVISORY and/or PROHIBITION:

Striped Bass—all sales prohibited.

American Eels—advised limited consumption (especially the Northeast region).

Bluefish—advised limited consumption of large bluefish (over six pounds or 24 inches).

A. NEWARK BAY COMPLEX

Prohibited—sale or consumption of all fish, shellfish, or crustaceans from the Tidal Passaic River; sale or consumption of striped bass and blue crabs and sale of American eels from the entire complex. Advised—limited consumption of bluefish, white catfish, white perch.

Newark Bay Complex includes Newark Bay, Passaic River (up to Dundee Dam), Hackensack River (up to Oradell Dam), Arthur Kill and Kill van Kull and tidal portions of all tributaries.*

B. HUDSON RIVER (NJ waters)

Advised—very limited consumption of striped bass and limited consumption of white perch, white catfish and bluefish. Prohibited—sale of American eels.

Hudson River includes the River up to the NJ-NY border, approximately four miles above Alpine, N.J., and Upper New York Bay.*

C. LOWER NEW YORK BAY

Lower New York Bay is not in New Jersey State waters. While New Jersey's guidelines may be helpful, fishermen in NY waters, including Lower New York Bay and the NY part of the Upper New York Bay and Hudson River should also consult New York State's advisories, which are similar to New Jersey's.* For information on NY's advisories contact NY DEC, Bldg. 40, SUNY, Stony Brook, NY 11794; 516-751-7900.

D. RARITAN BAY COMPLEX

Advised—limited consumption of bluefish, striped bass, white catfish and white perch.

Raritan Bay Complex includes the NJ portion of Sandy Hook and Raritan Bays and the tidal portion of the Raritan River upstream to the Rt. 1 bridge and New Brunswick and the tidal portions of all tributaries.*

E. NORTHERN COASTAL WATERS

Advised—limited consumption of striped bass.

Northern Coastal Waters includes all coastal waters from Raritan Bay south to Barnegat Inlet.

F. CAMDEN AREA

Prohibited—sale and consumption of all fish, crustaceans and shellfish.

Camden Area includes Strawbridge Lake, Pennsauken Creek (N and S Branches), Cooper River and its drainage, Cooper River Lake, Stewart Lake, and Newton Lake.*

G. SOUTHERN DELAWARE RIVER

Advised—against consumption of channel catfish.

Prohibited—sale of channel catfish.

Southern Delaware River refers to that area of the River between Interstate 276 bridge, Burlington Township, Burlington County, and Birch Creek, Logan Township, Gloucester County, approximately at the PA-DE border across the River (approx. 2 miles below the Commodore Barry Bridge).*

*Detailed delineations of areas are for purposes of these guidelines only (under N.J.A.C. 7:25-18A, etc.).

DEFINITIONS

Limited Consumption—means a person should consume not more th one meal per week of such fish a persons of *high risk* such as pregna women, nursing mothers, women child bearing age and young childre should not eat *any* such *fish* tak from the designated regions.

Very Limited Consumption is t same as above except to further restr consumption to no more than one m per month.

PREPARATION SUGGESTIONS TO REDUCE EXPOSURE TO CONTAMINANTS

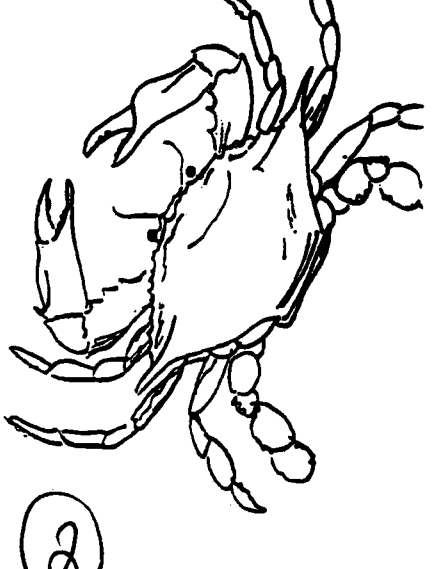
1) Remove belly flaps, backstrap a lateral-line tissue prior to cooking.

2) Broil on elevated rack; boil water; can fish without skins.

3) Never use the liquid which c tains oils and fats as a food item.

4) Avoid coatings which hold in or fats.

This article draws from previo published information developed by Division of Science and Research. For m detailed data on history, health effects, write to Paul Hauge, NJ DEPE, Div. Scie & Research, CN409, Trenton, NJ 086



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REFERENCE NO. 25

APPRAISAL OF WATER RESOURCES IN THE HACKENSACK RIVER BASIN, NEW JERSEY

By L. D. Carswell

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations 76-74

Prepared in cooperation with
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES

June 1976

GEOLOGY

General Features

During the Late Triassic Epoch downfaulting produced a series of northeastward-trending basins in the Piedmont Plateau from North Carolina to Nova Scotia. Sedimentary and associated igneous rocks of Triassic age occupy the downfaulted basins and are known as the Newark Group. In New Jersey the Newark Group crops out in a band 16 to 30 miles wide trending southwestward from the Hudson River to the Delaware River (fig. 1). In the vicinity of the Delaware River the Newark Group is about 12,000 feet thick (Johnson and McLaughlin, 1957, p. 32). The bedrock in the Hackensack River basin is a part of the Newark Group of Late Triassic age.

The sedimentary rocks of the Newark Group in New Jersey are composed of reddish brown arkosic sandstone, mudstone, siltstone, and conglomerate, and dark-gray argillite. The sediments were derived largely from rocks of Paleozoic and Precambrian age to the southeast and were deposited in a nonmarine intermontane basin (Van Houten, 1965). In Triassic time the sedimentary rocks were intruded by diabase sills (intrusions which parallel the enclosing beds) and dikes (intrusions which cut across the bedding). The diabase is more resistant to erosion than other rocks of the Newark Group and generally forms ridges such as the Palisades.

The Newark Group has been divided into three formations on the basis of distinctive lithology: a lower unit, the Stockton Formation; a middle unit, the Lockatong Formation; and an upper unit, the Brunswick Formation. The Lockatong interfingers with both the underlying Stockton and overlying Brunswick; its presence has been reported at only one locality in the Hackensack River basin (Van Houten, 1964, p. 500). The distribution of the units of the Newark Group in the Hackensack River basin is shown in figure 3.

The beds of the Newark Group generally strike north to northeast in the Hackensack River basin and dip west to northwest at approximately 10 degrees. A prominent set of steeply dipping joints parallels the strike of the beds. A less prominent set of nearly-vertical joints parallels approximately the direction of dip of the beds. In the cliffs along the Hudson River the diabase has well developed columnar jointing which inspired the name "Palisades" for the vertical columns of rock. The faults that cut and displace the Triassic rocks typically strike northeastward and are parallel to or intersect the strike of the beds at a low angle.

Surficial deposits cover most of the bedrock in the Hackensack River basin and are largely a result of several major advances of the continental glaciers across the area during the Pleistocene Epoch. Younger deposits of Holocene age, consisting largely of alluvium deposited by present-day streams, overlie the glacial deposits. The alluvium is restricted to the flood plains of the streams.

Lockatong Formation

The Lockatong Formation has been identified at only one location, North Bergen, in the Hackensack River basin. Here it consists of argillite that has been altered to hornsfels during the emplacement of the adjacent diabase sill (Van Houten, 1964, p. 500).

The Lockatong overlies the Stockton Formation and is overlain by the Brunswick Formation. Laterally it intertongues with both the Brunswick and the Stockton Formations.

The Lockatong Formation is composed of cyclic units of chemical and detrital origin that average 15 feet in thickness. The detrital deposits are mudstones composed of abundant sodium feldspar, calcite, illite, and chlorite with very little quartz and potassium feldspar. In the chemical deposits the mudstone contains abundant analcime, albite, dolomite, calcite, illite, and chlorite. Dolomite and analcime casts of skeletal glauberite (and possibly anhydrite) crystals are common in some of the chemical deposits (Van Houten, 1965).

The formation is 90 feet thick at North Bergen. It thins northward and is entirely missing at the New York-New Jersey State line. It presumably thickens south of North Bergen and is 3,750 feet thick in western New Jersey and adjacent Pennsylvania.

Brunswick Formation

The Brunswick Formation overlies the Stockton Formation and forms the bedrock throughout most of the Hackensack River basin. It is reddish-brown and composed of mudstone, siltstone, sandstone, and conglomerate. In the southern part of the basin mudstone is the dominant lithology. The deposits gradually become coarser grained northward (Kümmel 1898, p. 43 and Savage, 1968) so that in the northern part of the basin in New York the Brunswick consists largely of sandstone and commonly contains beds of conglomerate.

Gypsum and glauberite are reported to occur in the Brunswick Formation. Herpers and Barksdale (1951, p. 37) have reported the presence of gypsum from well borings in the Newark area just south of the Hackensack River basin. Glauberite has long been known to be present locally in the Brunswick Formation. Van Houten (1965, p. 834) reports that some beds enclose large complete molds of glauberite, as well as rosettes of elongate calcite casts. The coarser deposits are fledspathic and are commonly cemented by calcite (Van Houten, 1965, p. 834).

The thickness of the Brunswick Formation in the Hackensack River basin is unknown. Herpers and Barksdale (1951, p. 23) estimated the Brunswick to be about 6,000 to 7,000 feet thick in the Newark area just south of the Hackensack River basin.

Diabase

Sills and dikes of diabase (commonly called traprock) intruded the strata of the Newark Group. They are relatively resistant to erosion and form the Palisades ridge, Laurel Hill, and Little Snake Hill. Minor intrusive bodies of diabase are found at North Arlington and Bogota. The diabase dikes at Laurel Hill, Little Snake Hill, and Bogota cut the Brunswick Formation at high angles. The diabase at North Arlington is a sill, and that which forms the Palisades is a semiconcordant sill. The latter sill was fed by dikes and the upper and lower contacts of the sill locally cut across the bedding of the Stockton Formation. The Palisades diabase is 1,200 feet thick north of Englewood and thins southward to Jersey City (Darton, in Merrill and others, 1902, p. 9).

Diabase is a black, hard, dense rock composed of about equal amounts of plagioclase fledspar and augite. The texture ranges from finely crystalline in small dikes or chilled border zones of large intrusions to coarsely crystalline in the center of large intrusions where the rock solidified slowly thus giving the crystals a longer time to grow. Diabase is extensively quarried for road metal, particularly the dike at Laurel Hill and along the west flank of the ridge formed by the Palisades sill.

Quaternary Deposits

Pleistocene Deposits

Unconsolidated deposits overlying the Newark Group consist of sand, gravel, silt, and clay, that were deposited largely during the last (Wisconsin) glaciation of the Pleistocene Epoch. These deposits are generally thickest in the valleys and are thin or absent on hill crests. The deposits can be broadly subdivided into till and stratified drift. Till is an unsorted mixture of sand, gravel, silt, and clay deposited directly from the ice. It covers almost all the bedrock in the Hackensack River basin. The thickness of the till is variable; it averages 25 feet and is known to exceed 165 feet locally in the meadows area. Stratified drift consists of sand, gravel, silt, and clay which has been transported by water; it is poorly to well sorted. The stratified drift was deposited in contact with the ice or as outwash in flood plains, deltas, and as fine sediment in lakes during and after the retreat of the ice.

Stratified drift deposits of varved silt and clay, as much as 300 feet thick in the meadows, occur in two troughs (fig. 4) which roughly parallel the sides of the basin and probably connect a few miles south of the New York State line. Perlmutter (1959, p. 25) has reported similar deposits of laminated clay continuous with those of New Jersey in southern Rockland County, New York. Because of their varved character and lack of marine fossils, the silt and clay are presumed

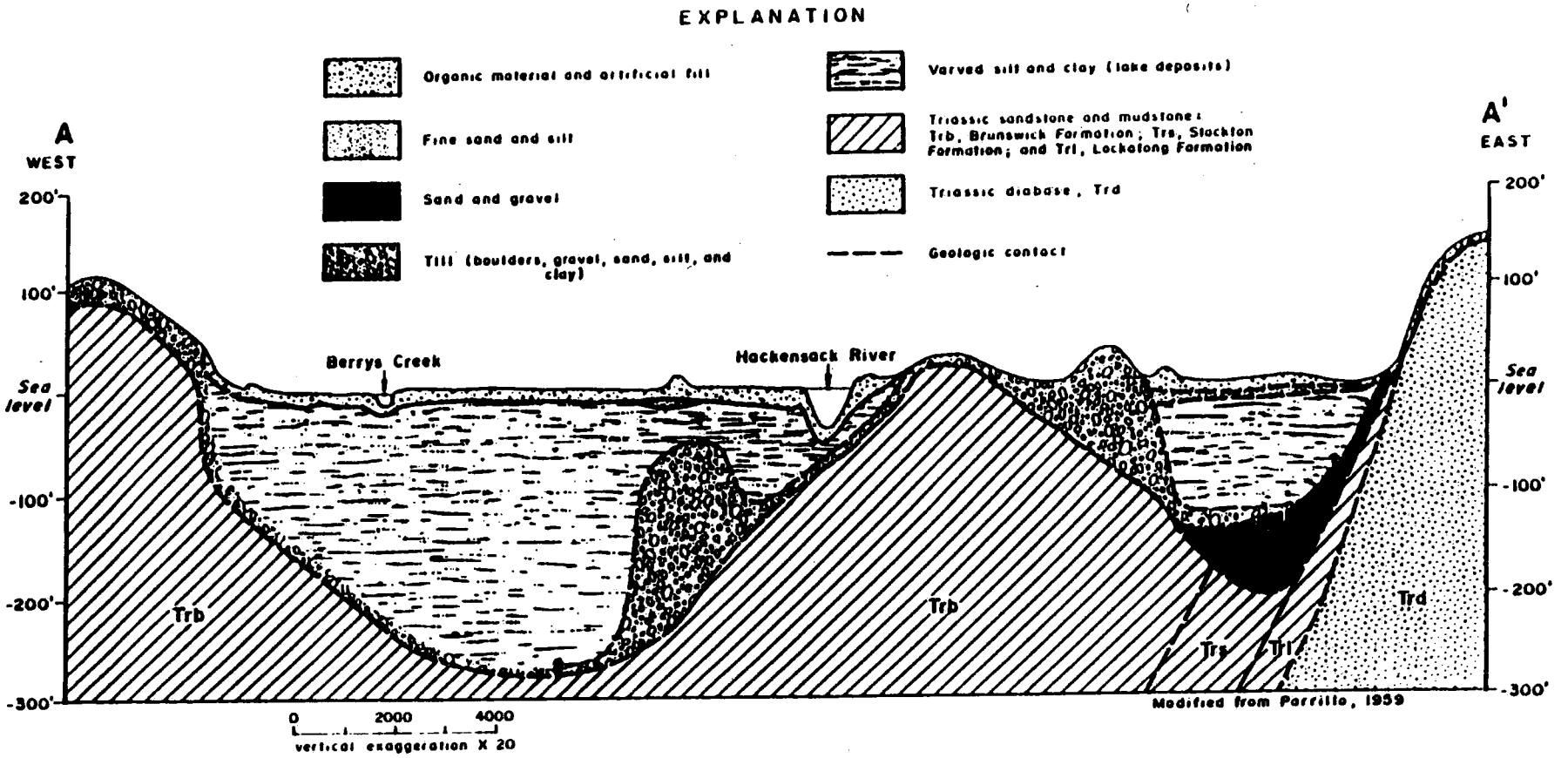

Figure 4.--Geologic section across the Hackensack Meadows area.

In the interval between 1927 and 1963 the average yearly total dissolved solids content of the Hackensack River in the upper area increased from 104 mg/l to 184 mg/l and the hardness calculated as calcium carbonate increased from 37 mg/l to 77 mg/l (analyses by the Hackensack Water Company). Some of the increased dissolved solids content resulted from cycling water through municipal and domestic sewage systems.

The Hackensack Meadows in the lower area of the basin are utilized for the disposal of 57 mgd of treated municipal sewage effluent and industrial waste, rich in nitrates and phosphates. During summer months, particularly when precipitation is deficient, brackish water from Newark Bay flows up the Hackensack River. The chloride concentration in Newark Bay is approximately 10,000 mg/l. In the late summer of 1961 concentrations as high as 4,000 mg/l were found in the Hackensack River as far north as Hackensack and concentrations of several hundred milligrams per liter occurred near the northern part of the area below New Milford. This high concentration of chloride makes the water in the lower Hackensack unsuitable for municipal and industrial processes although it is usable for cooling purposes.

Ground Water in Consolidated Rock

Stockton and Lockatong Formations

The Stockton Formation underlies a small area on the west side of the Palisades in the Hackensack River basin. Because of its limited areal extent in the basin and because it has hydrologic properties similar to those of coarser parts of the Brunswick Formation, the hydrology of the Stockton Formation is not discussed separately in this section.

The Lockatong Formation is thin and is known from only one exposure in the basin. No wells are known to penetrate it within the basin. Based on studies made elsewhere in New Jersey, the Lockatong can be expected to yield considerably smaller quantities of water than the finer-grained parts of the Brunswick Formation.

Brunswick Formation

Occurrence and Movement of Ground Water

Ground water in the Brunswick Formation occurs in a network of interconnected openings formed along joints, fractures, and solution channels. The intervening unfractured rock has negligible capacity to store and transmit ground water. The openings which contain ground water decrease in size and number with increasing depth below land surface. As some beds within the formation contain more openings than others, the ground-water system consists of a series of alternating tabular aquifers and aquicludes several tens of feet thick and dipping

to the northwest at approximately 10 degrees. The water-bearing fractures in each tabular aquifer are more or less continuous, but hydraulic connection between individual tabular aquifers is poor. These tabular aquifers generally extend downdip for a few hundred feet and are continuous along strike for thousands of feet.

In an areally extensive, homogeneous, and isotropic aquifer, drawdown caused by pumping a well is equal at all points equidistant from the pumped well. This is not true, however, in a consolidated rock aquifer, such as the Brunswick Formation, where water is stored in and transmitted through secondary openings, which generally have some preferential alinement and are better developed in some beds than they are in others. In the Newark area, Herpers and Barksdale (1951, p. 29) observed a drawdown in an observation well located 2,400 feet from a pumped well in a direction parallel to the strike of the beds, whereas no distinct drawdown was evident in observation wells 600 feet from a pumped well in a direction transverse to the strike. They also observed that as a consequence of heavy pumping, high-chloride water from Newark Bay intruded the aquifer farthest along the strike of the beds. Similar observations on the anisotropism of the Brunswick Formation have been documented by Vecchioli (1967) and Vecchioli and others (1969). Their pumping-test data indicate that the direction of highest permeability and of the movement of water in response to pumping characteristically parallels the strike of the beds. Therefore, well fields, wherever possible, should be designed with wells alined transverse to the strike of the beds in order to minimize interference.

Thickness and Distribution of Water-Producing Zones

Estimates of the thickness of the ground water producing zone in the Brunswick Formation have been based typically on review of drilling records and on the observation that when a well has not successfully tapped a water-yielding zone in the first 400 feet of drilling, water-yielding zones are not likely to be penetrated by drilling deeper.

The zone in the Brunswick Formation containing joints and fractures that are capable of storing and transmitting fresh water has been variously estimated to be between 200 and 600 feet thick (Herpers and Barksdale, 1951, p. 27; Greenman, 1955; Rima, 1955; Perlmutter, 1959; and Parker and others, 1964). The depth and distribution of water-producing zones in the Brunswick Formation were determined at Lansdale, Pennsylvania, by Rima (1955) who injected water into several wells and traced the flow of the injected water by means of a flow meter. Rima concluded that the Brunswick in the Lansdale area contains an upper water-table aquifer of low permeability occurring at depths of less than 250 feet below land surface; below this depth there are one or more artesian or semiartesian aquifers of high permeability, generally less than 20 feet thick each, and occurring at depths as great as 600 feet.

The zone of fresh ground water in the Hackensack River basin locally appears to be thinner than 200 feet. Injected slugs of salt water were traced with an electric logger in seven wells, 400 to 500 feet deep, in the main valleys of the Hackensack River and Pascack Brook. When the wells were pumped at 25 to 35 gpm with a drawdown of about 5 feet, about 60 percent of the water entered the wells from above a 100-foot depth; about 90 percent entered from above a 200-foot depth. Below a depth of 200 feet, the maximum yield was 2 gallons for 5 feet of drawdown for the entire lower part of the well (fig. 10). Although none of these wells penetrated high-yielding zones below a depth of 200 feet, other wells in the main valleys reportedly have penetrated high-yielding zones below a depth of 200 feet. The relatively small thickness of the zone containing water-bearing openings in the seven wells shown on figure 10 may be a result of the removal by glacial scour of a considerable thickness of rock containing water-bearing openings.

Where there are differences in hydraulic head between water-bearing openings internal flow occurs under nonpumping conditions within the well from the zone of higher head to the zone of lower head. In upland areas where recharge is dominant, hydraulic heads generally decrease with increasing depth and internal flow is downward in the wells. In lowland areas where discharge is dominant, heads increase with increasing depth and flow is upward in wells. In some wells the water may flow at the surface.

To confirm this flow pattern borehole-velocity measurements were made under nonpumping conditions in seven wells in the valleys of the Hackensack River and Pascack Brook. In four of the wells no internal movement of injected brine slugs could be measured during a half hour or more of observation. Two wells (Emerson 3 and Hillsdale 6) flowed at the surface and upward internal flow occurred also in the third well (Harrington Park 6) although the well did not flow at the surface (fig. 11).

Borehole-velocity measurements were made under nonpumping conditions in six wells located in the upland valleys near minor tributaries of Pascack Brook and in one well on the divide between the Hackensack and Saddle River drainages. Figure 12 shows borehole flow from water-yielding zones in the upper 175 to 200 feet downward to "thieving" zones extending to within 50 feet of the bottom of the wells. These wells range in depth from 270 to 350 feet. This downward flow is a consequence of penetrating water-bearing beds having successively lower hydraulic heads with increasing depth.

Two of the six wells in upland valleys, which showed downward internal flow at depth, simultaneously flowed at the surface at 10 to 15 gpm. Three of the six wells were subsequently pumped at rates from 35 to 100 gpm and additional borehole velocity measurements were made while pumping. In each case the water pumped from the well

came from a zone 50 to 100 feet below land surface. Below this depth the internal flow was downward but at a lower rate than under nonpumping conditions. Figure 13 shows the downward internal flow of water in Park Ridge well No. 16 under nonpumping conditions and the simultaneous upward and downward internal flow when the well was pumped at 100 gpm.

When the water level in a pumping well declines below the top of a water-producing zone the rate of drawdown can increase because that part of the producing zone which is above the water level in the well no longer contributes as much water to the well. Figure 14 shows the time-drawdown relation during a pumping test on Emerson well No. 3. When the well was pumped at 250 gpm the water level in the well declined at a constant rate until the water level dropped below the base of the casing and into the zone which was transmitting water to the well. When this occurred the rate of drawdown increased markedly.

Wells having downward internal flow under nonpumping conditions may not have penetrated to the maximum depth of the fresh-water circulation system. In the seven wells in which measurements were made (fig. 12), no measurable flow was found near the bottom of the well regardless of the depth of the wells. This lower zone of no flow may result from either plugging of fractures during drilling or lack of adequate development near the bottom of the borehole. The maximum velocity of the water moving down the borehole of most of the wells was near a depth of 200 feet below land surface. The lower or "thieving" zone in the deepest wells appear to be as thick or thicker than the producing zones (fig. 12). The zone which thieves under nonpumping conditions may become a producing zone while pumping, provided that there is sufficient drawdown in the well. Therefore, the potential yielding zone in the uplands or in small valleys in the uplands is probably more than 300 feet thick and may be as great as 400 to 500 feet thick. The difference in head between the top producing zone and the base of the lowest thieving zone is not known, but a suggestion of its magnitude is provided by data from a well in Park Ridge. Deepening the well from 200 to 500 feet caused a drop of 30 feet in the water level. This new water level in the well represents a composite of all heads at the well and is presumably higher than the head in the lowest water-bearing zone.

The internal flow in wells under nonpumping conditions results from the penetration of a hydrologic system having hydraulic gradients that have vertical components. Flow through the borehole therefore is a short-circuiting of natural flow. One effect of this short-circuiting is to accelerate the movement of water from areas of recharge to areas of discharge. The effects of short-circuiting can be put in perspective when related to recharge. For example, precipitation at a rate of 45 inches per year averages about 3,340 gallons per day per acre. If one half of the precipitation is

evaporated or transpired, 1,670 gallons remain to run off directly to streams and to enter the ground-water system. A well having downward internal outflow of only 1 gallon a minute, or 1,440 gpd, is accelerating the movement of all the recharge available from about one to two acres of land. A number of such wells in an area with downward flow can result in a substantial water-table decline.

Another consequence of downward internal flow in wells is that the cleaning and development of the lower part of a well is made difficult or impossible unless the head relations in the well are artificially reversed because any surging action will tend to move drilling mud out into fractures in the "thieving zone" in the well. However, the downward flow assists in the cleaning and development of the upper part of the hole where there is a gradient toward the borehole. Well development generally increases the yield of a consolidated rock well; but which zones are actually developed is rarely known.

Yields and Specific Capacities of Wells

In most of the Hackensack River basin and Bergen County, the Brunswick Formation yields only small to moderate supplies of ground water to wells. A few wells outside the study area in Ridgewood, N. J., have yields of 500 to 1,000 gpm.

The frequency of occurrence of yields, specific capacities, and depths from available data on wells tapping the Brunswick Formation in Bergen County are shown on figures 15, 16, and 17. In general for the same frequency of occurrence, industrial and municipal-supply well yields are 10 times as great as domestic well yields. Industrial and municipal-supply wells are at least twice as deep and have twice the specific capacity of domestic wells. The median industrial or municipal-supply well is 260 feet deep, yields 100 gpm, and has a specific capacity of 1.5 gpm per foot of drawdown; the median domestic well is 120 feet deep, yields about 10 gpm, and has a specific capacity of about 0.7 gpm per foot of drawdown.

The difference between yields of industrial and municipal-supply wells and those of domestic wells result from the vastly different requirements of the owner, and the economics of well construction and development. For most domestic purposes small-diameter (6-inch) wells are drilled and the well is typically located for convenience and low costs. A well yield of a few gallons a minute is adequate and when such a yield is obtained drilling is stopped. Little effort is expended in developing the maximum potential yield of the well. In contrast, a maximum supply of ground water is sought for industrial or municipal-supply wells. Such wells are of large diameter (8 to 12 inches) and may be located utilizing the advice of a ground-water consultant. The consultant may specify and supervise drilling techniques and the extensive development and testing of the completed well.

Ground Water in Unconsolidated Deposits

Ground water occurs in the interstices, or pores, between grains in unconsolidated deposits. Unconsolidated deposits in the Hackensack River basin consist of till, varved silt and clay, alluvium, sand and gravel. Small quantities of ground water are stored in till which overlies the bedrock throughout most of the basin. Till characteristically has low permeability because of its poorly sorted nature and does not yield water to wells in sufficient quantities for other than domestic use. Deposits of varved silt and clay such as the lake beds that overlie bedrock and till in most of the meadows, are poorly permeable and impede the movement, discharge, and recharge of water. Alluvium is thin, not widely distributed, and has little value as a source of ground water.

Sand and gravel may store and transmit large quantities of ground water where they are coarse, saturated, and near a source of recharge. However, areas in the Hackensack River basin where large supplies of ground water may be developed from coarse sand and gravel are limited. In the upper area of the basin only small quantities of ground water have been developed from unconsolidated deposits with the exception of a few wells at Park Ridge where recharge is induced from Pascack Brook. Furthermore, large-scale ground-water development in the limited areas along stream valleys would reduce streamflow which is currently utilized for water supply at Oradell Reservoir.

Coarse sand and gravel deposited in deltas at the mouths of streams that entered Lake Hackensack (fig. 5), yield large supplies of ground water at Hackensack, Rutherford, and Newark. Deltaic deposits at Westwood, Ridge Edge, Lyndhurst, and in the southern part of Hackensack have not been outlined by drilling and may be small and thus have little potential as sources of ground-water.

In a narrow area between the eastern buried valley and the Palisades Ridge is a poorly defined but probably continuous sequence of coarse sand and gravel that extends at least as far north as Englewood and possibly as far north as Closter (fig. 5). Near North Bergen, wells yielding more than 300 gpm derive water from the sand and gravel where they are in hydraulic connection with the Hackensack River.

The chemical quality of ground water in the unconsolidated deposits in the Hackensack Meadows is highly influenced by the quality of water in the Hackensack River and waters that flood the meadows as a result of tides. Pumping has reversed the natural gradients and induced recharge from these generally highly mineralized sources. For example, heavy pumping at Hackensack and near North Bergen has induced recharge of poor chemical quality from the Hackensack River into the sand and gravel aquifers.

As the upper area of the basin has become more urbanized and water demands have increased, progressively smaller quantities of fresh water have been permitted to enter the meadows from upstream sources of the Hackensack River. During the drought from 1960 to 1965 practically no fresh water flowed into the meadows. Furthermore, the lower area is used for disposal of 57 mgd of sewage and industrial wastes, an amount equivalent to about one third the average precipitation that falls on the area. The preceding combination of factors makes surface water of poor quality available for induced recharge to the unconsolidated deposits in the meadows. This water is suitable for cooling if precautions are taken to prevent corrosion by water that may have a chloride content of several thousand milligrams per liter.

SUMMARY AND CONCLUSIONS

Bedrock in the Hackensack River basin is composed of sedimentary and igneous rocks of the Newark Group of Triassic age. The Brunswick Formation of the Newark Group is composed of mudstone, siltstone, and sandstone and is the most important bedrock aquifer in the basin. Water occurs in this formation in a network of interconnected openings formed along joints, fractures, and solution openings. Because of preferential alinement of these openings the formation is anisotropic: greatest permeability and the major component of water movement in response to pumping is parallel to the strike of the beds. Consequently, well fields designed with wells alined transverse to the strike would have minimum interference between wells.

The zone in the Brunswick Formation that contains fresh-water-bearing openings is generally less than 200 feet thick in the main valleys of the Hackensack River and Pascack Brook. In upland areas the zone is greater than 300 feet thick and may be as much as 400 to 500 feet thick.

The median reported yield of industrial and public supply wells tapping the Brunswick Formation in Bergen County, which includes most of the Hackensack River basin is 100 gpm. The median specific capacity of wells tapping the Brunswick is 1.5 gpm per ft drawdown. The most productive wells (300 to 600 gpm) are located in narrow belts on the east and west flanks of the Hackensack Meadows where the Brunswick Formation is hydraulically connected to coarse-grained, highly permeable, unconsolidated deposits.

The Stockton and Lockatong Formations of the Newark Group have very limited areal extent and are not important aquifers in the basin. Diabase, an igneous rock, yields small quantities of water to wells; generally less than 35 gpm to industrial wells.

Overlying the Newark Group throughout the basin are unconsolidated deposits consisting of alluvium of Holocene age and till, varved silt and clay, and sand and gravel of Pleistocene age. The sand and gravel have value as a source of ground water, yielding large supplies (greater than 300 gpm) of ground water locally.

Ground water from the Brunswick Formation in the upper area of the basin is relatively low in mineral content and of moderate hardness. Water from the Brunswick in the lower area is hard to very hard and highly mineralized. Here the water quality in both the Brunswick and unconsolidated deposits is influenced by water quality of the Hackensack River and Newark Bay. Heavy pumpage has induced recharge of poor quality water, high in chloride, from these sources. Both surface and ground-water quality in the lower area is influenced by the disposal of large quantities of sewage and industrial wastes in the Hackensack Meadows.

Utilization of surface water in the Hackensack River basin above Oradell Reservoir is approaching its maximum limit. Consequently, development of additional water supplies from the ground water reservoir is limited, because it would decrease surface-water supplies. Ground-water development is limited also by the small amount of ground water stored in the basin and by the intrusion of surface water of poor quality into the ground-water reservoir in the lower area of the basin.

TABLES

Table 1 indicates the construction and yield characteristics of selected wells in the Hackensack River basin. Aquifer designations are: Trb Brunswick Formation, Trdb diabase, Q Quaternary deposits. The use of the well is indicated by letter symbols which are: A abandoned, C commercial, D domestic, I industrial, and T test well. In the remarks column the current status and use of the well and quality of produced water is further defined where known. The letters BT indicate that borehole velocity measurements were made in the well during the course of this investigation. The location of the wells is shown on figure 2. The wells are numbered serially in each political subdivision. Table 2 is a compilation of chemical data on water from wells in the New Jersey part of the basin.

Table 1.--RECORDS OF SELECTED WELLS IN THE HACKENSACK RIVER BASIN

No.	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Altitude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diameter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Drawdown (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	BERGEN COUNTY-WOODCLIFF LK-Cont.																
9	Hackensack W C	23.33.9.6.4	Artesian	4-65	105	400	112	8	111	--	Trb	21	55	179	.3	I	B1
10	Boro of Park Ridge	23.33.5.6.7	Rinbrand	1965	450	300	--	8	60	--	Trb	26	30	--	--	I	
	HUDSON COUNTY-HARRISON																
1	Worthington Pump & M Co.	26.12.9.5.9	----	--	15	400	295	9	--	--	Trb	80	250	40	6.3	I	
2	Harmon Color Wks. Inc.	26.12.9.5.9	----	1910	10	362	--	8	--	--	Trb	100	200	100	2.0	I	Cl 1,800 to 1950
3	T. Schriver Co	26.12.9.5.5	----	--	15	40	--	8	--	?	Q	29	46	--	--	I	
4	do.	do.	----	--	15	40	--	6	--	?	Q	29	30	--	--	I	
5	Liquid Carbonic Corp.	26.12.9.8.1	----	1938	20	489	307	8	--	--	Trb	67	225	87	2.6	I	
6	do.	do.	----	1914	20	465	320	8-6	--	--	Trb	67	90	90	1.0	I	
7	Hyatt Roller Bearing Co.	26.12.9.8.4	----	1918	9	950	277	8-6	395	--	Trb	79	136	--	--	I	
8	do.	do.	----	1918	9	987	282	8	--	-	Trb	--	147	--	--	I	
9	do.	do.	----	1914	8	241	--	8	--	-	Trb	--	--	--	--	I	

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No.	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Altitude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diameter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Drawdown (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	HUDSON COUNTY-HARRISON-Cont																
10	Hyatt Roller Bearing Co.	26.12.9.8.4	----	--	8	90	--	8	--	--	q(?)	11.5	150	--	---	I	
11	Driver Harris Co.	26.12.9.7.6	----	--	9	337	292	12	--	--	Trb	76	600	--	--	I	Cl 1,680 1948
12	do.	do.	----	1946	9	300	279	8	--	--	Trb	18	469	41	11.4	I	
13	Pub. Serv. & Gas Co.	26.12.9.7.9	----	1932	11	699	218	12	--	--	Trb	17	400	139	2.9	I	
14	Crucible Steel Co. of America	26.12.9.8.4	----	1943	10	600	160	10-10	--	--	Trb	114	600	66	9.1	I	
15	Delaware & Western RR	26.12.9.8.3	H. W. Smith	8-27-52	20	225	--	6	115	--	Trb	96	18	--	--	I	
	JERSEY CITY																
1	Dodge & Bliss	26.13.8.9.5	----	1920	20	80	--	--	--	--	q	--	50	--	--	I	
2	Spalding & Jennings	26.23.2.5.7	----	--	20	422	57	--	--	--	Trs	--	75	--	--	I	
3	Crucible Steel Co. of America	26.23.1.9.1	----	1925	12	240	--	--	--	--	Trb	--	100	--	--	I	
	KEARNY																
1	Wilpet Tool Mfg. Co.	26.12.9.6.4	Rinbrand	4-26-61	10	700		10	290	--	Trb	60	570	115	4.8	I	
2	Platt Tool & Mfg. Co.	26.12.6.9.9	Frank Bott	2-16-60	8	500	60	8	54	-	Trb	---	185	113	1.6	I	

Table 1.--RECORDS OF SELECTED WELLS IN THE HACKENSACK RIVER BASIN

No.	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Altitude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diameter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Drawdown (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	HUDSON COUNTY-KEARNY-Cont.																
3	Pfaft Tool & Mfg. Co.	26.12.6.9.9	Frank Butt	1961	8	760	60	8	--	--	Trb	80	145	120	1.2	I	
4	E. I. DuPont	26.12.6.8.9	Stothoff	10-9-20	20	401	166	10-4	175	--	Trb	29	148	156	1.0	I	
5	do.	26.12.9.3.3	do.	10-30-20	5	202	124	10	130	--	Trb	--	174	--	--	I	
6	do.	26.13.4.7.7	do.	2-15-21	5	504	185	10	221	--	Trb	28	124	40	3.1	I	
7	E. I. DuPont	26.12.6.9.8	do.	9-1-16	20	802	47	10	49	--	Trb	29	90	--	-	I	
8	Joe Davis Plastics Co.	26.12.9.5.3	----	1930	10	350	17	8	--	--	Trb	17	168	54	3.1	I	
9	do.	26.12.9.5.1	----	1958	10	400	26	--	--	--	Trb	--	20	--	--	I	
10	Lawter Chem.	26.13.7.8.9	----	1939	8	200	112	8	--	--	Trb	--	--	--	--	I	Abandoned
11	American Stores	26.13.7.9.8	----	1941	8	1041	82	8	--	--	Trb	28	60	122	.5	I	
12	Koppers Gas & Coke Co., Inc.	26.13.8.8.2	----	1915	5	--	--	--	--	--	Trb	--	53	--	--	--	
13	N. Verzalero	26.12.9.6.1	Burrows	--	5	235	145	6	146	--	Trb	100	150	15	10	I	
	N. BERGEN																
1	Meer Corp.	26.14.1.5.6	Burrows	8-6-50	4	153	12	8	12	--	Trdb	2	100	22	4.5	I	
2	do.	26.14.1.5.1	do.	9-50	5	200	--	8	11	--	Trdb	--	60	--	--	I	

Table 1.--RECORDS OF DRILLED WELLS IN THE HACKENSACK RIVER BASIN

	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Alti-tude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diam-eter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Draw-down (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	HUDSON COUNTY-N. BERGEN-Cont.																
3	Beer Corp.	26.14.1.5.5	Rimbrand	9-15-60	15	301	14	8	21	--	Trap	30	35	270	.1	I	
4	Consolidated Bleaching Co.	26.14.1.8.1	Storbort	7-31-50	10	528	91	10-6	91	--	Trap	[illegible]	44	155	.3	I	
5	Gibraltar Paper Co.	26.14.1.4.6	Burrows	11-10-51	5	228	120	8	120	[illegible]	Q-Trap	17	10	82	.12	T	Abandoned
6	do.	do.	do.	1-21-52	1	170	118	6	116	--	--	--	--	--	--	T	
7	Grand City Cont. Corp	26.14.6.8.9	Artesian	3-5-51	5	16	225	6	--	--	--	--	--	--	--		
8	Armour & Co.	26.14.1.7.1	----	--	5	101	--	--	--	--	Trap	--	98	--	--	I	
9	do.	do.	----	--	5	150	40	8	--	--	Trap	--	15	--	--	I	
10	do.	do.	----	1930	5	108	--	12	--	--	Q	--	250	--	--	I	11 ppm cl 1931 230 " cl 1937 440 " cl 1938
11	do.	do.	----	1931	5	111	111	24-12	--	--	Q	--	125	--	--	I	
12	do.	do.	----	1937	5	108	--	12	--	--	Q	--	--	--	--	I	
13	do.	do.	----	1937	5	111	111	24-12	--	--	Q	--	--	--	--	I	
14	do.	do.	----	1937	5	100	100	18-12	--	--	Q	[illegible]	100	61.5	4.7	I	

Table 1.--RECORDS OF SELECTED WELLS IN THE HACKENSACK RIVER BASIN

No.	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Altitude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diameter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Draw-down (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	HUDSON COUNTY-N. BERGEN-Cont.																
15	Nat. Cylinder Gas Co.	26.15.1.8.2	----	1945	5	--	70	--	--	--	Trb	--	75	--	--	I	685 ppm cl 1938 430 ppm cl 1960
16	Mundet Cork	26.15.1.8.7	----	1955	10	65.5	--	12	--	--	Q	13	305	15	20.3	I	
17	W. Bergen Realty Co.	26.11.6.6.6	----	1962	8	72	--	10-12	--	--	Q	20	90	50	1.8	C	Brackish
18	DeAngelis Packing Co.	26.11.9.2.4	----	1967	10	60	60	10	--	--	Q	5	15	21	.7	I	
19	Chas. Miller & Co.	26.11.9.2.5	----	1936	5	35	--	12	--	--	Q	.5	700	14.5	48.3	I	
	SECAUCUS																
1	I. Vander Wall	26.11.1.7.6	Reinbrand	12-26-51	5	200	17	6	17	--	Trb	5	20	5	4.0	I	
2	Keystone Metal	26.11.6.4.2	do.	3-3-50	10	200	18	8	18	--	Trb	flows	76	101	.8	I	
3	do.	do.	do.	8-10-60	10	150	--	8	21	--	Trb	35	150	110	1.4	I	
4	Erie Railroad	26.11.8.3.1	----	1931	15	184	15	10	--	--	Trb	6	200	38	5.3	A	Water unsuitable for boiler use
5	do.	do.	----	1931	15	182	16	10	--	--	Trb	--	5	--	--	A	
6	Charles Hoag, Inc.	26.11.6.7.6	----	1946	10	465	--	--	--	--	Trb	--	16	--	--	A	

Table 1.--RECORDS OF SELECTED WELLS IN THE HACKENSACK RIVER BASIN

Well	Owner or Tenant	New Jersey Grid No.	Driller	Year Drilled	Altitude above msl (ft)	Total depth drilled below lsd (ft)	Depth to bedrock below lsd (ft)	Diameter of well (in)	Depth to which well is cased (ft)	Screen setting (ft)	Aquifer	Static level below lsd (ft)	Yield (gpm)	Drawdown (ft)	Specific Capacity (gpm/ft)	Use	Remarks
	HUDSON COUNTY-N. BERGEN-Cont.																
7	Charles Haag, Inc.	20.11.6.7.6	Stothoff Co	5-1-53	10	295	20	10	11.6	--	Trb	1.7	63	118	.5	A	
8	Gateway Motor Inn.	20.11.6.5.1	----	1962	8	160	--	6	--	--	Trb	8	55	7	7.9	C	

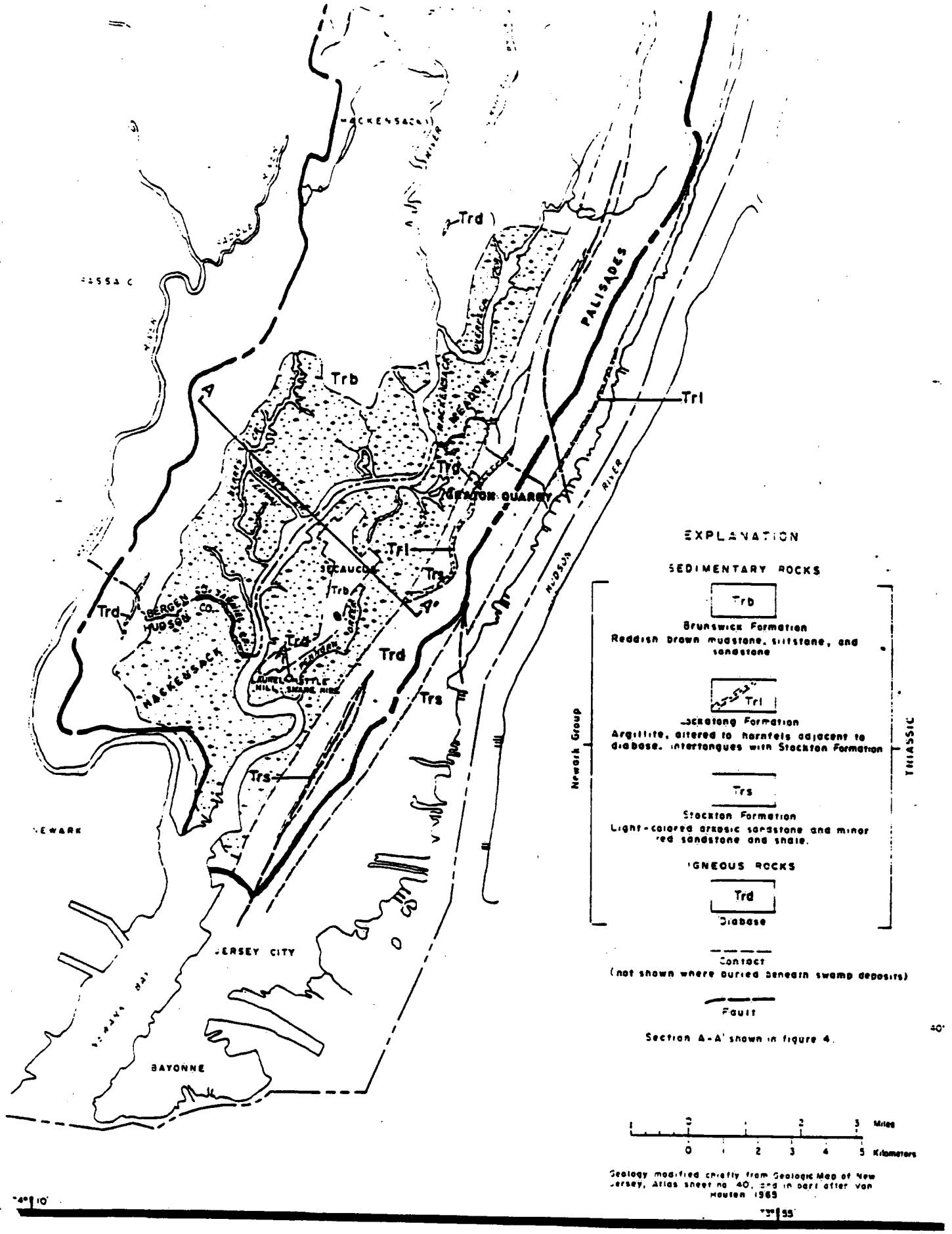


Figure 3.--Geologic map of consolidated rock units in the Hackensack River basin

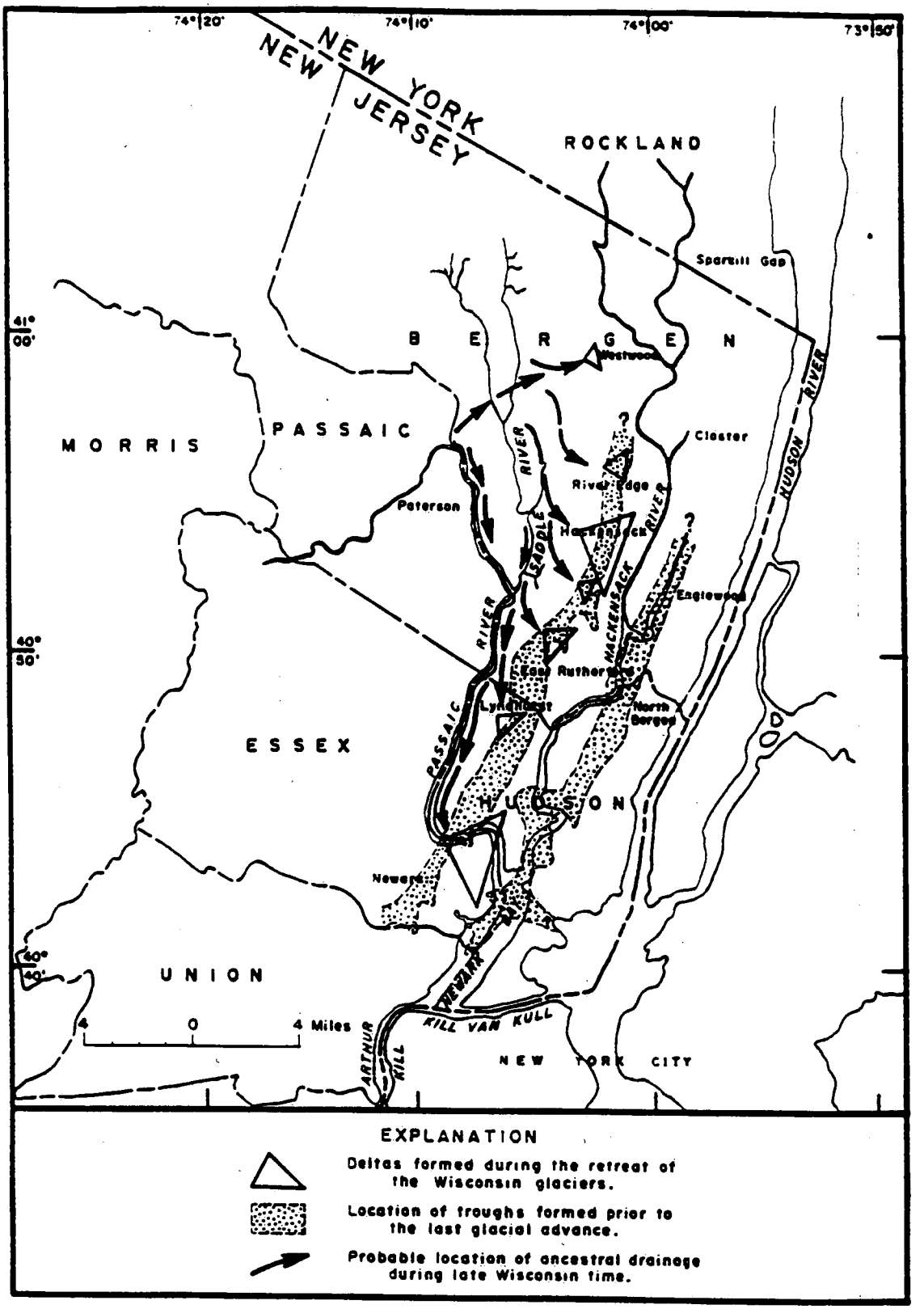


Figure 5.--Map showing the location of drainage and deltas formed during the retreat of the Wisconsin Glaciation.

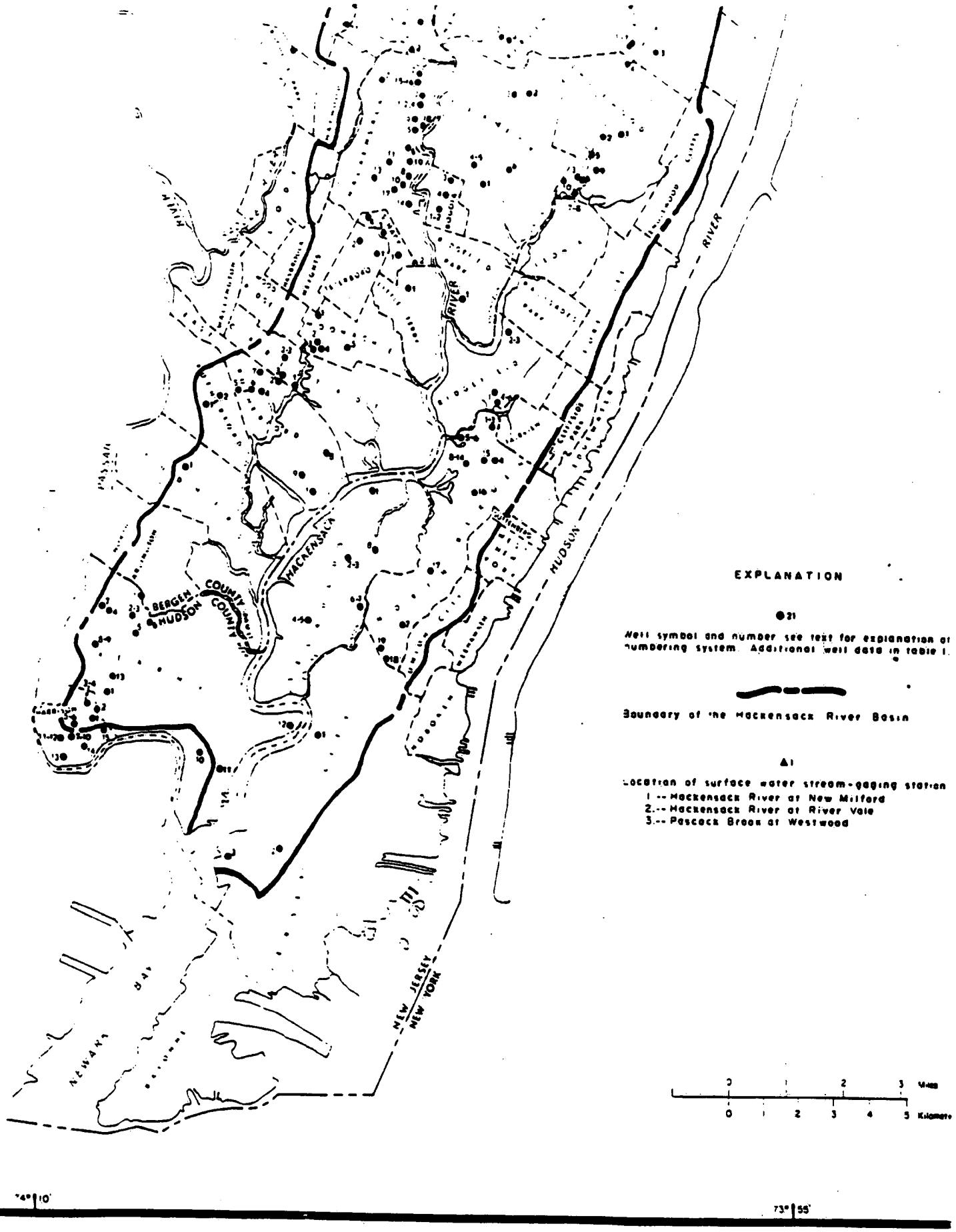
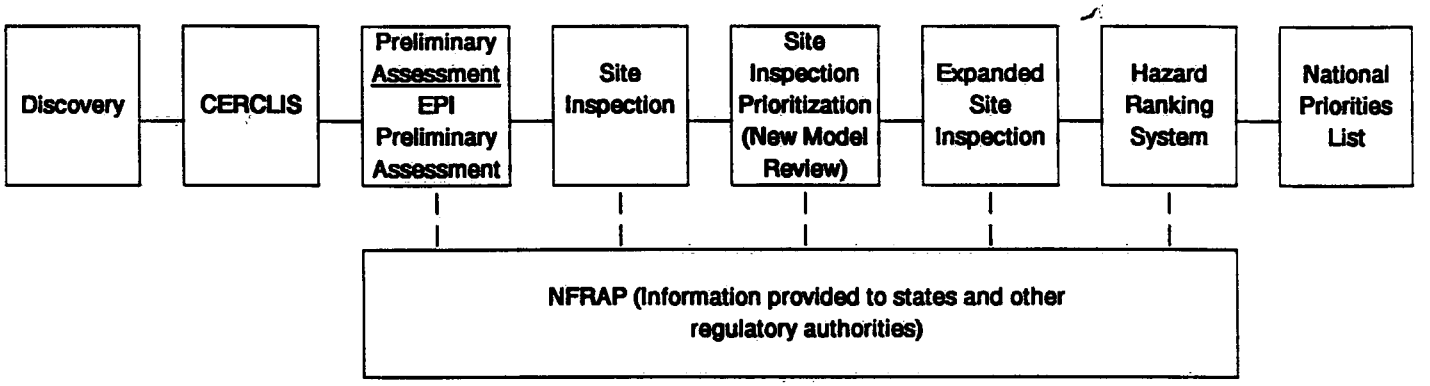


Figure 2.-- Well location map of the Hackensack River basin.

ATTACHMENT 2

SUPERFUND SITE ASSESSMENT PROGRAM



SITE ASSESSMENT REPORTS

1. PRELIMINARY ASSESSMENT
   - * Quick Review of Readily Accessible Records and Reports
   - * Undertaken to Determine the Existence of a Problem and the Need for Further Action at a Site by Characterizing:
     - – Magnitude of the Hazard
     - – Source and Nature of the Release or Potential Release
     - – Identification of Targets
   - * Does Not Include Sample Collection
2. SITE INSPECTION
   - * The Purpose of the Site Inspection is to:
     - – Further Define and Characterize the Problem
     - – Provide Data for the Hazard Ranking System (HRS) Scoring and Compute Initial Score
     - – Identification of Targets
     - – Determine the Necessity of Further Action
   - * The Site Inspection Involves an On–Site Visit and Sampling (10+/– Samples)
   - * A Site Inspection is not an Extent of Contamination Study
3. SITE INSPECTION PRIORITIZATION
   - * Quick Review of Readily Accessible Records and Reports
   - * Undertaken to Determine the Validity and Update Background Conditions Under the New HRS Model, and the Need for Further Action at a Site by Characterizing:
     - – Magnitude of the Hazard
     - – Source and Nature of the Release or Potential Release
   - * Included On–Site Visits or Sample Collection as needed
     - – Analyze Samples/Limited Analytical Resources
     - – Account for Significant Safety Hazards On–Site
4. EXPANDED SITE INSPECTION

   A Follow–Up Inspection May Be Recommended After the SI To:
   - * Gather Additional Data Necessary to Strengthen or Substantiate the Initial HRS Score
     - – Geophysical Surveys
     - – Installation of Groundwater Monitoring Wells
     - – Additional Sampling

Review of Analytical Data

If previous analytical data are available, they should be reviewed for information which supports the design of the sampling and analysis program, tests site hypotheses, and documents the site score. The SI investigator should review all previous analytical data. While analytical data collected for other purposes may not meet SI objectives, site-specific analytical data are generally helpful in better understanding the nature of the problem at the site, regardless of data sources or data quality. The depth of the review depends on the overall quality and quantity of data, the intended use of the data, and whether they are representative of current site conditions and comparable to SI data. Determining whether available data can be applied as SI-generated data requires the professional judgement of an experienced reviewer. Both validated and non-validated analytical data may be available. Previous SI data will be validated and of CLP-quality. Non-validated data may contain false positives and false negatives, as well as quantitation, transcription, and calculation errors. If data of unknown or questionable quality are used for decision-making, the investigator should review all available information to assess the level of certainty associated with the data. If these data are used for HRS documentation, data validation will be necessary. The investigator should be able to determine the general quality of the data set by reviewing QC data for evaluation under the Superfund Program.